NOTEBOOK EXTREMES

Hefty or thin, the choice is yours. Key battles in notebook market are happening at opposite ends of spectrum. Page 81

THAT'S THE WAY IT WAS

How technology helped newsman Walter Cronkite predict a landslide in the 1952 presidential election. Page 86

COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS ▪ WWW.COMPUTERWORLD.COM

JANUARY 25, 1999 ▪ VOL. 33 ▪ NO. 4 ▪ $4/COPY

Y2K MAY STALL WINDOWS 2000

Analysts pessimistic; many expect mid-2000 shipment for Microsoft operating system

BY SHARON GAUDIN

A growing number of analysts are warning users not to expect delivery of Windows 2000 before the middle of next year.

That's at least six months after the delivery date pinpointed last week by Ed Muth, Microsoft Corp.'s group product manager for Windows NT. And the delivery date Muth targeted in his statement — which came on the heels of a confirmed one-month delay in the release of the third beta of the updated operating system — is later than what Microsoft had predicted. In a statement last year, it pegged mid-1999 for the final release of Windows 2000.

Aside from any Microsoft issues, the major culprit behind analysts' prediction of a delay is the year 2000 problem and related system freezes that are expected to go into effect in the second and third quarters at many user companies.

"Based on Microsoft's history and the events coming up this year, like Y2K, I don't see them coming out

Windows 2000, page 16

JUST THE FACTS

Ripple Effect

Applications that could be affected by a Windows 2000 delay:

- Office 2000
- The BackOffice suite, including updates for:
  - SQL Server
  - Exchange Server
  - BackOffice Server

PORTALS LINK BUYERS, SELLERS

Web marketplaces cut costs, speed purchasing

BY CAROL SLIWA AND SHARON MACHLIS

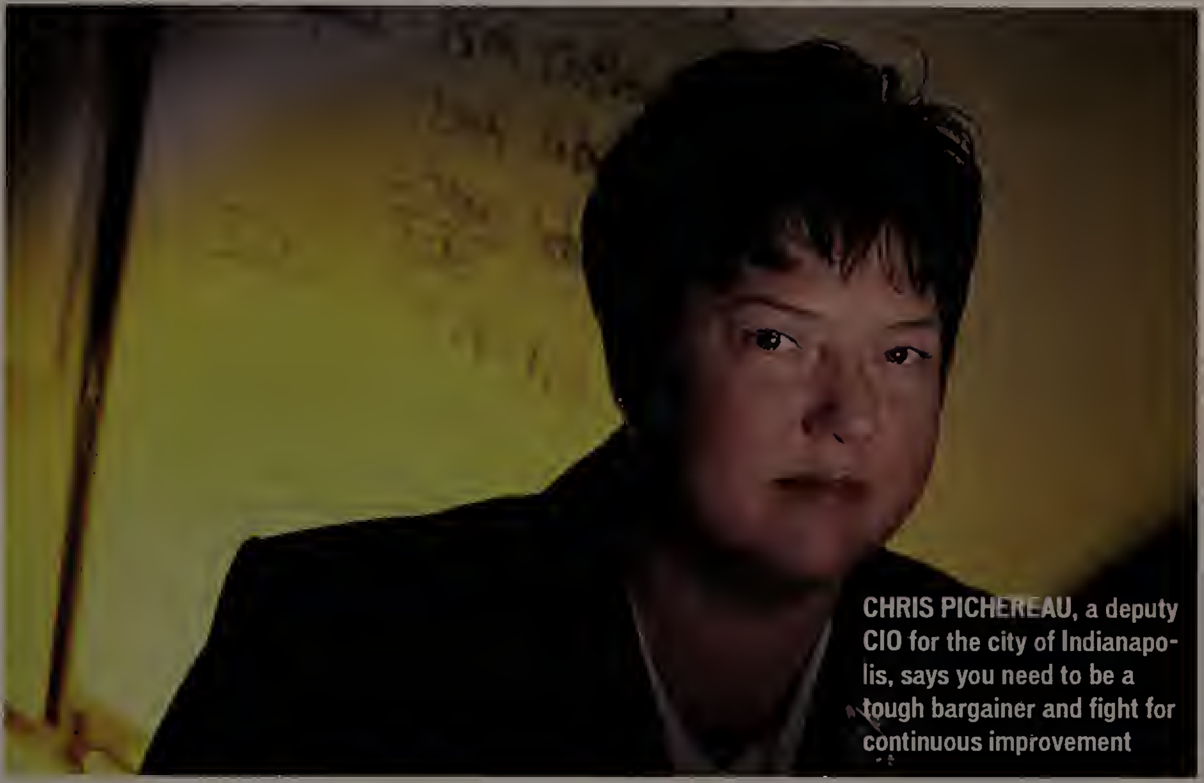
Got cows?

Business users can now buy everything, be it cows, chemicals, electronic parts or paper, through Web portals designed to help them find goods and compare suppliers' prices in specific vertical industries.

Users say this emerging business-to-business purchase process will make transactions faster, simpler and potentially more cost effective.

Take electronics components. Robert Child, director of corporate purchasing at EFTC Corp., an 1,800-employee electronics maker in Denver, said it might take two or three days and 10 or 20 calls just to locate

Portals, page 16



CHRIS PICHEREAU, a deputy CIO for the city of Indianapolis, says you need to be a tough bargainer and fight for continuous improvement

MARC BERLOW

NO PANACEA

HELP DESK OUTSOURCING

Farming out the headaches of the help desk to a contractor is a fast-growing trend — and it seems like such a great idea. But as national correspondent Julia King reports, CIOs are learning that a bad outsourcing deal just creates an endless loop of finger-pointing and frustrated users who can't get their technical problems solved. The upshot: Some companies are dumping their outsourcer for poor performance, bringing the help desk back in-house or renegotiating the contract to get service-level agreements.

As one analyst put it, "Broken help desk processes and problems aren't going to be magically fixed by outsourcing." *See page 24.*

COMPAQ NEEDS ENTERPRISE VISION

Hurdles: User retention, product integration

BY JAIKUMAR VIJAYAN AND APRIL JACOBS

It has talked the talk. But can it walk the walk?

One year after stunning the industry with its bid to buy Digital Equipment Corp. — and seven months after the deal went through — Compaq Computer Corp. has made great strides in its bid to be perceived as an enterprise player. But that hasn't meant security for the company's enterprise users.

Compaq has promised users that it will make OpenVMS, Alpha and Digital Unix its high-end platforms of choice. But the Wintel-centric company — which purchased Digital primarily for its service capabilities — has yet to explain how it plans to do that while integrating its now broad family of technologies into a long-term enterprise strategy.

Compaq, page 103

STEVE BURNS

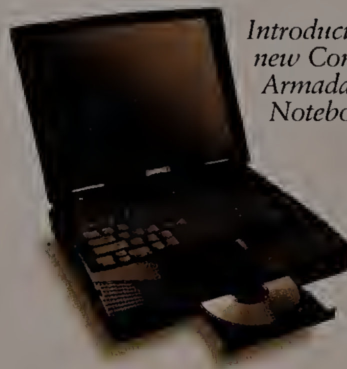
COMPAQ CEO Eckhard Pfeiffer could be in trouble, analysts say, if product revenue slows down. Quarterly results are expected this week

NEWSPAPER

Where is it
written
that performance
and price
can't coexist?

COMPAQ
The Deskpro EN: enterprise-powerful, yet a miracle of manageability.
intel inside
pentium II

NOTEBOOKS



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The fully integrated notebook from Compaq that combines the latest key technology with uncompromising value.

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- 12.1" CTFT SVGA display
- 24X Max CD-ROM[4]
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- Intelligent Manageability pre-installed
- 1-year worldwide limited warranty[3]

Armada 3500

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The lightest notebook from Compaq, weighing only 4.4 lbs.

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- Optional CD-ROM or DVD via Mobile Expansion Unit
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- 3-year worldwide limited warranty[3]

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$3,999[1]

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- 24X Max CD-ROM[4]
- Magnesium-alloy display casing for durability
- Optional ArmadaStation Expansion Base
- Intelligent Manageability pre-installed
- 3-year worldwide limited warranty[3]

These Compaq Armada Notebooks support:
- Multibay design for easy swapping of options
- Network Environment Optimization
- Certification for multiple operating systems, including Windows NT® 4.0 (Microsoft® Windows® 95 standard)

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The industry's first space-saving, full-featured, high-performance rack server.

- Up to two Intel Pentium II processors 400 or 450 MHz
- Standard 64 MB ECC 100 MHz SDRAM expandable up to 1 GB
- Fully rack optimized: 3U form factor (5.25") allowing up to 14 servers in a 42U rack, slide rails for in-rack serviceability
- 3 Hot Pluggable Hard Drive expansion bays allow for internal RAID support
- 2 available half-height non-pluggable expansion bays

New ProLiant 6000

Starting at **$10,229[1]**

Breakthrough enterprise performance and expansion for the best value in business-critical environments with next generation 4-way Pentium II Xeon™ processors 450 MHz.

- Up to four Pentium II Xeon processors 450 MHz featuring 512 KB or 1 MB of L2 cache and a 100 MHz front-side bus
- 256 MB on 50ns ECC memory standard, expandable to 8 GB capacity
- Advanced I/O for faster throughput with three PCI buses, nine PCI slots, including five 64-bit PCI slots
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- Fast Ethernet 64 PCI, dual-based 10/100 controller, upgradable to Gigabit Ethernet
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- Optional 3100ES 3 channel array controller with redundant capability

New ProLiant 3000

Starting at **$4,429[1]**

Industry's most expandable departmental server delivering the perfomance to run demanding departmental applications.

- Up to two Intel Pentium II processors 400, 450 MHz
- Highly Parallel Systems Architecture for better performance and memory scalability
- Supports up to 4 GB Registered 100 MHz SDRAM
- Supports up to 109.3 GB Internal Hot Plug Storage
- Fault Tolerant Features: Hot Plug Drives, Hot Plug Power Supplies and Redundant Fan Options
- "Best of" LAN Times Award, Department Servers, LAN Times magazine (September '98 Year in Review)
- Now with tower and rack-mounted configurations for each processor speed

All Compaq ProLiant servers feature:
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- Pre-failure warranty standard
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DESKTOPS

Introducing the Compaq Deskpro EN Series

Deskpro EN Series Desktop C333/3200

$1,209[1]

The Deskpro EN Series features a breakthrough design that raises the bar on manageability and serviceability.

- Intel Celeron™ processor 333 MHz
- 32 MB SDRAM
- 3.2 GB[8] SMART II Ultra ATA Hard Drive
- ATI RAGE PRO TURBO AGP
- Compaq PremierSound
- Compaq V55 15" (13.7" viewable) monitor
- Microsoft Windows 95 pre-installed
- 3-year limited warranty[3]

Deskpro EN Series Desktop C400/C400

$1,559[1]

- Intel Celeron processor 400 MHz
- 64 MB SDRAM
- 6.4 GB[8] Ultra ATA SMART II Ultra Hard Drive
- ATI RAGE PRO TURBO 2X AGP
- Compaq PremierSound
- Compaq V55 15" (13.7" viewable) monitor
- Microsoft Windows 95 pre-installed
- 3-year limited warranty[3]

Deskpro EN Series Minitower 6400/6400/CDS

$2,069[1]

- Intel Pentium II processor 400 MHz
- 64 MB SDRAM
- 6.4 GB[8] SMART II Ultra ATA Hard Drive
- 32X Max CD-ROM[4]
- ATI RAGE PRO TURBO 2X AGP
- Compaq 10/100 TX PCI Intel NIC with Remote Wakeup
- Compaq PremierSound
- Compaq S700 17" (15.7" viewable) monitor
- Microsoft Windows NT Workstation 4.0 pre-installed
- 3-year limited warranty[3]

Deskpro EN Series Desktop 6450/10000

$2,319[1]

- Intel Pentium II processor 450 MHz
- 64 MB SDRAM
- 10 GB[8] SMART II Ultra ATA Hard Drive
- ATI RAGE PRO TURBO 2X AGP
- Compaq 10/100 TX PCI Intel NIC with Remote Wakeup
- Compaq PremierSound
- Compaq S700 17" (15.7" viewable) monitor
- Microsoft Windows NT Workstation 4.0 pre-installed
- 3-year limited warranty[3]

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Introducing our new AP line of professional workstations

Compaq Professional Workstation AP200

Starting at **$1,667**[1]

Entry-level Windows NT-based workstation that provides exceptional performance features for budget conscious customers.

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- 512 KB cache & 100 MHz front side bus
- 64 MB or 128 MB RAM standard (expandable to 384 MB)
- 6.4 GB[8] Ultra ATA or 4.3 GB Wide-Ultra SCSI Hard Drive (9.1 GB optional)
- 6 slots/5 bays
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- Compaq Ethernet 10/100 NIC NC3121

Compaq Professional Workstation AP500

Starting at under **$2,261**[1]

Windows NT-based workstation with outstanding performance and expandability to meet the needs of users seeking an affordable 2P system in a minitower design.

- 1 or 2 Intel Pentium II processors 400 or 450 MHz
- 512 KB cache & 100 MHz front side bus
- 64 or 128 MB ECC Registered SDRAM (expandable to 1 GB)
- 6 slots/7 bays
- Integrated Wide-Ultra SCSI or Ultra ATA Hard Drive
- 6.4 GB[8] Ultra ATA; 4.3 GB, 9.1 GB, 18.2 GB Wide-Ultra SCSI (7,200 and 10,000 RPM)
- 32X Max CD-ROM[5]
- GLoria Synergy+ or PowerStorm 300 graphics solutions
- Rack Mount Capable
- Microsoft Windows NT Workstation 4.0 pre-installed

Compaq Professional Workstation SP700

Starting at under **$3,551**[1]

Dual-processor, Pentium II Xeon processor based workstation for customers requiring uncompromising performance and scalability.

- 1 or 2 Pentium II Xeon processors 400 or 450 MHz
- 100 MHz Registered ECC SDRAM, 128 or 256 MB standard (maximum of 4 GB)
- 9 slots/7 bays
- Dual Channel Wide-Ultra SCSI Controller
- Dual-Peer PCI Buses
- Dual Memory Controllers (1.6 GB/s memory bandwidth)
- 4.3 GB or 9.1 GB 10,000 RPM drives
- GLoria Synergy+ or PowerStorm 300 graphics controllers

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SEE YA

Exit interviews may be painful, but they can help IT managers such as Don Harris (pictured) improve their organizations – Page 58

WILL MCINTYRE

ELEGANCE

Some programmers have what it takes; others don't. We convene a panel to figure out why – Page 82

LARRY GOODE

COMPUTERWORLD THIS WEEK

JANUARY 25-31, 1999

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6 **MICROSOFT STRUGGLES** with monopoly label, cites Linux, Palm III as competitors.

8 **RETAILERS LOVE** Web stores but wonder if they need better customer service.

9 **NEW R/3** installers take two approaches: leap or creep.

10 **SUPER BOWL APP** will track game, update stats on-screen in real time.

12 **CC:MAIL USERS GET** the message: move to Notes. Lotus adds migration tools.

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72 **APPLE'S** Jon Rubinstein talks about the new G3's role in the corporate market.

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73 **NET MANAGEMENT** tools from HP, MIL-3 use traffic flows to improve simulations.

OPINION

74 **FRANK HAYES** urges IT to hop on the "appliance" bandwagon — or be run over by it.

75 **QUICKSTUDY:** How 128-bit encryption keys make Internet transactions more secure.

76 **WE TALK TO** five IT shops that linked legacy systems to the Web.

86 **FLASHBACK** to 1952; Univac I helps CBS predict a presidential landslide.

89 **WE SHADOW** an IT executive to find out what skills you need in the telecom field.

To our readers

Computerworld has introduced a new design that improves readability and groups similar content together around three sections: **NEWS, BUSINESS** and **TECHNOLOGY.**

■ The **NEWS** section has more briefs and shorter news items. We have also added a page of business news about the computer industry. Begins on **Page 4**

■ Our new **BUSINESS** section is now home to the **Managing** and **IT Careers** departments. Weekly **E-commerce** and **Year 2000** departments also will appear here. Begins on **Page 37**

■ The **TECHNOLOGY** section now encompasses several departments that previously stood alone. They include the **QuickStudy, Software, Networks** and **Hardware** departments. Begins on **Page 67**

Frank Hayes' **Frankly Speaking** column also can be found in Technology, on page 74. Review Center is now called **Field Report** and appears on page 76. And product stories can be found in **Exec Tech**, on page 84. Finally, the **Skills Scope** feature on IT careers can be found at the end of the Technology section on page 89.

■ Also new is **Career Adviser** (page 65), a bimonthly advice column; and **Flashback** (page 86), a yearlong retrospective on the past 50 years of computing.

■ The redesign was developed with Roger Black Inc. in New York.

There's an Easier Way to Reach Your SAP Data.

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AT DEADLINE

IBM Readies PCs

IBM said it will introduce a small-business PC today, with pricing starting at $1,149. The IBM PC 300GL Small Business Series will be available in Intel Pentium II 350-, 400- and 450-MHz editions or Intel Celeron 333- or 366-MHz models. The machines will include ViaVoice – IBM's speech recognition software – and both Microsoft Office and Lotus SmartSuite.

Suit Shutters Site

Swiss police have shut down a Web site that authorities said published the lyrics to thousands of popular songs without the authors' permission. The district attorney in Basel ordered that International Lyric Server's equipment be seized as evidence. The National Music Publishing Association in the U.S. had filed suit against the site.

Code Cracked

The Electronic Frontier Foundation's Deep Crack supercomputer won the code-cracking challenge at RSA Data Security Inc.'s annual conference. Deep Crack deciphered a message encrypted with a 56-bit Data Encryption Standard algorithm in 22 hours, 15 minutes, beating its own mark of 56 hours, set last year.

Windows Refunds?

Several Web sites, including a popular site for the Linux operating system (*www.linuxmall.com/refund/*), are hosting what they call The Windows Refund Center. Users can learn details about how to apply to Microsoft Corp. for a refund on the Windows operating system that comes with most new PCs. Would-be refund recipients must switch to Linux, Novell Inc.'s NetWare or some other system – and do it before ever having run Windows on the PC in question.

Short Take

NETSCAPE COMMUNICATIONS CORP. said a new Directory for a Secure E-Commerce package intended to help companies manage user profiles and security on high-traffic sites will be available in the second quarter.

MCI PUSHING USERS TOWARD WEB BILLING

Plan to charge more for paper invoices part of growing retail trend

BY MATT HAMBLEN

MCI WORLDCOM Inc. plans to start charging corporate customers for paper-based bills as a means of enticing them to use a new interactive, Web-based billing and network-monitoring system called Interact, company officials said last week.

The Jackson, Miss.-based company will officially unveil Interact at the ComNet trade show in Washington this week. The charges for paper bills — ranging from $50 to hundreds of dollars for big corporations — might not take effect until next year, officials said.

One goal is to cut the costs associated with paper invoices. At some large customers, "these monthly bills are literally delivered on a pallet" and are measured in pounds, not by number of pages, said Ron McMurtrie, vice president of product marketing at MCI WorldCom.

Analysts said it would be the first time a telecommunications company charged for its paper invoices. Recently, Delta Air Lines Inc. announced a $2 surcharge for round-trip flights not purchased through its Web site [CW, Jan. 18], following a trend among banks to charge extra for in-person transactions with tellers.

"It's a good idea to move to Web billing," said Eileen Eastman, an analyst at The Yankee Group in Boston. "Paper is usually unsatisfactory from a company's point of view, since they need to slice and dice the data" in an electronic format.

Interact is actually an MCI extranet accessed by customers using their regular Web browser and a password. Corporate managers can download the billing data and then drill down to analyze the calls made in any given period in a certain department or search quickly for calls on a single extension.

Users said the charges for paper bills didn't seem too onerous. "Actually, a lot of companies prefer online data," said Ruth Michalecki, chairwoman of the International Communications Association, a large corporate user group in Dallas. ▶

JUST THE FACTS

Paper Bills Are Extra

Expected charges for MCI WorldCom paper-based bills sent to customers

- Starts at $50 for a two-office customer
- Can go up to several hundred dollars for companies with multiple sites
- Once it begins, plan will be phased in with Web-based billing for three months

MOREONLINE

For telecommunications links, publications, mailing lists, policies, regulatory bodies and other resources, visit our Web site: www.computerworld.com/more

Legislation Seeks To Stem Expensive Y2K Lawsuits

McCain's bill would limit punitive damages

BY MATT HAMBLEN

With 34 lawsuits over year 2000 problems already in the courts, House and Senate Republicans hope to stem a costly legal stampede with legislation, including a bill filed last week.

Sen. John McCain (R-Ariz.) introduced the Y2K Act, which has been referred to his Senate Commerce Committee. A similar House bill was filed Jan. 6. Both measures limit court awards so that punitive damages would be no larger than three times the amount of actual economic losses. The bills also would create courtroom alternatives such as arbitration to avoid time-consuming court proceedings. "The purpose of this legislation is to ensure that we look to solving ... Y2K rather than clog our courts with years of costly litigation," McCain said.

There are already at least 34 year 2000 lawsuits pending in state and federal courts, including the latest, brought Jan. 13 by a large New York law firm against AT&T Corp. and Lucent Technologies Inc., according to analysts and court records.

The Clinton administration is unsure legislation is necessary. "There is no consensus position on liability legislation among the industry groups working on the matter," said John Koskinen, chairman of the President's Year 2000 Conversion Council. However, David LeDuc, manager of legislative policy at the Software and Information Industry Association in Washington, said his group is working with an informal Y2K coalition of industries that believes otherwise. "There's a consensus and a need for a large bill . . . to address the large number of cases coming," he said. ▶

Corrections

A Dec. 14 IT Careers story ("Roads to the Top," page 95) misidentified one of the divisions involved in a common systems implementation at Dayton Hudson Corp. The systems are being implemented at divisions including Target, Mervyn's and Marshall Field's.

A Dec. 7 News story ("Regional Groups Seek to Woo Tech Workers," page 14) misidentified the company sponsoring a Philadelphia symposium. It was Systems and Computer Technology Corp. in Malvern, Pa.

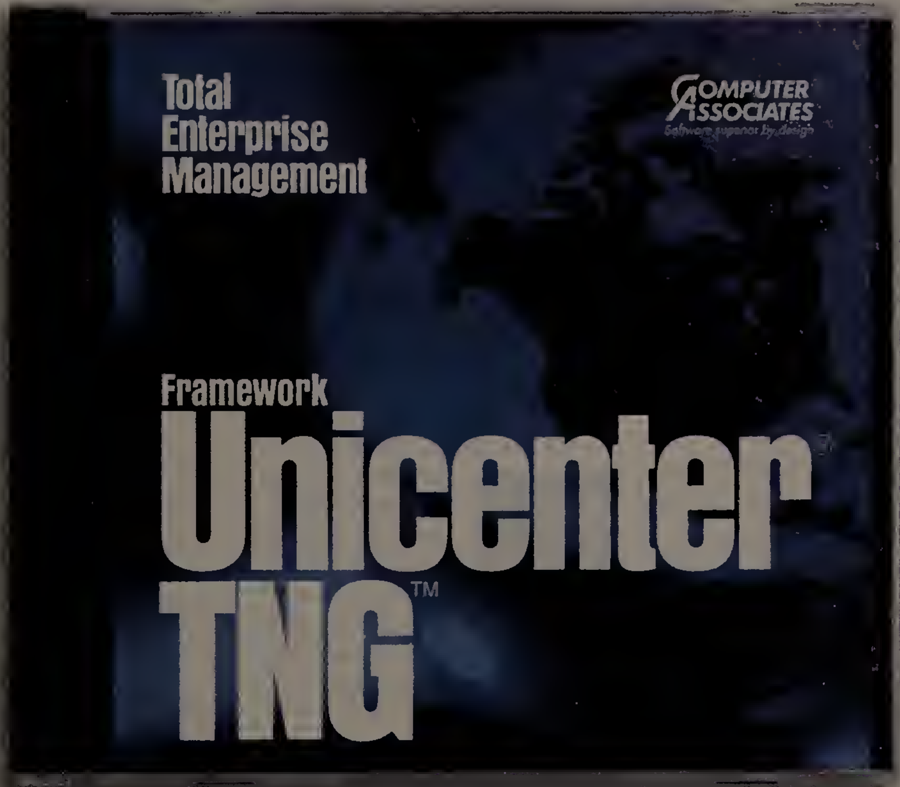
THE ASSOCIATED PRESS

MILLENNIUM MOMENT

President Clinton commented on the year 2000 problem in his State of the Union address last week:

"We also must be ready for the 21st century, from its very first moment, by solving the so-called Y2K computer problem. . . . We need every state and local government, every business, large and small, to work with us to make sure that this Y2K computer bug will be remembered as the last headache of the 20th century, not the first crisis of the 21st."

The Framework Is FREE. The Benefits Are Invaluable.

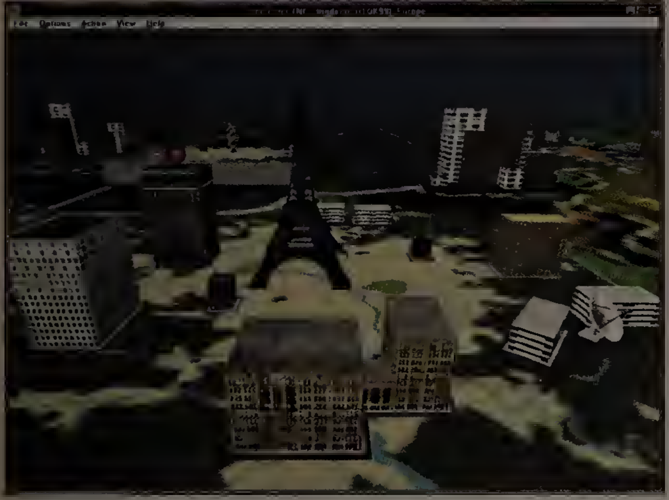


Time is money.

And, in today's competitive market, producing more with less has become something of a chorus for IT managers. But now there's an amazing new product that can solve your integration issues in a matter of days, rather than years. A state-of-the-art framework that manages your entire heterogeneous environment from a cross-platform perspective.

The Unicenter TNG Framework Saves You Time And Costs You Nothing.

The Unicenter® TNG™ Framework™ provides all the features you'll ever need to ensure a complete and robust enterprise solution. Distributed services, like an object repository, auto discovery, event and calendar management, reporting, and virus detection, as well as the revolutionary 3-D Real World Interface™ that incorporates virtual reality to help you navigate through your entire enterprise.



Unicenter® TNG™ uses virtual reality to create a 3-D environment representing objects in the real world.

The Framework, in conjunction with Unicenter TNG, the world-class enterprise management solution, brings you a completely extensible infrastructure with more than 50 additional management functions.

And, with literally hundreds of third-party solutions available for the Framework, time is no longer a commodity. Plug your own management applications into the Unicenter TNG Framework, and take advantage of the world's most reliable and widely used core support service available.

Enhanced Enterprise Management Across Any Platform.

Why ask your development team to spend the next five years building new solutions from scratch, when you can use the Framework as your foundation?

With the Framework, out-of-the-box integration is a reality. Today, more than 15 companies are shipping the Unicenter TNG Framework with their systems.

Unicenter TNG Is Widely Recognized As The Industry Standard For Network And Systems Management.

Unicenter TNG is the most open, interoperable and scalable management solution available. It has been supported by virtually every major hardware and software company, including Microsoft, Sun, SAP, Intel, HP, DIGITAL, Tandem, NCR, SGI, and Data General. Peter Kastner from the Aberdeen Group recently summed it up when he said, "Aberdeen positions the Framework as the enterprise management entry-level user choice and *de facto* ISV platform choice."

	# Of Developers	Develop Time (mos.)	Person Mos.	With TNG Framework
2-D and 3-D User Interface	5	8	40	Available Now
Object Repository	8	12	96	Available Now
Auto Discovery	6	9	54	Available Now
Calendar Management	5	8	40	Available Now
Virus Detection	3	7	21	Available Now
Reporting	4	5	20	Available Now
Business Process Views™	6	7	42	Available Now
Event Management	15	18	270	Available Now
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USERS, JUDGE SKEPTICAL OF MICROSOFT'S DEFENSE

Vendor claims that competition makes monopoly charge moot; outside court, users cite Microsoft's Windows dominance

BY PATRICK THIBODEAU
WASHINGTON

NEITHER users nor the judge in the Microsoft Corp. antitrust case are buying an argument critical to the company's defense: that Microsoft isn't a monopoly.

Microsoft says it can't charge high prices for inferior goods the way a real monopolist would, claiming that it has to stay ahead of potential platform threats. Those include technologies such as Linux, the open-source operating system; network computers; and handheld computers such as 3Com Corp.'s PalmPilot.

Some users, such as Michael Redman, information systems director at Nicholson Manufacturing Corp. in Seattle, would agree Microsoft can't predict the future, but that doesn't mean that Microsoft isn't a monopoly today. That, he said, "is like Rockefeller arguing that nuclear power could come in and force out the oil companies back at the turn of the century. The fact is that they are a monopoly at this point." But he said he didn't see Microsoft's monopoly as bad, and that its pricing has been fair. Nicholson manufactures a variety of products, including presses for hay bales and aerospace tools.

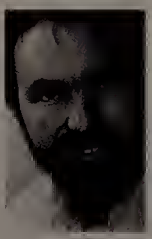
"I don't see any other operating system that has the potential of dethroning Microsoft," agreed David Nardi, information systems manager at R. M. Sullivan Transportation Inc. in Springfield, Mass.

AT THE TRIAL

Paul Maritz

Who is he? Microsoft's vice president of the platforms and applications group.

Likely to be asked: Explain what he meant in a June 1995 memo to Bill Gates, when he wrote, "Move Netscape out of Win32/Win95, avoid battling them in the next year." The government alleges Microsoft attempted to persuade Netscape to divide the browser market.



Nardi's view wasn't shared last week by Microsoft's sole economic witness, Richard Schmalensee, the dean of the Sloan School of Management at MIT and Microsoft's first witness. Schmalensee faced four days of cross-examination from government lawyer David Boies, who chuckled in disbelief while asking some of his questions.

"Are you suggesting," Boies asked, that the PalmPilot "is something that this court should seriously consider as a competitor to the Windows operating system?"

"No — now they're not a potential serious competitor," conceded Schmalensee. But he added, "I think to rule that out is to have a very constricted view of the dynamics of this industry."

The many applications available for Windows makes it difficult for operating system rivals to compete in any meaningful way, countered Charles Cortese, chief technical officer at Wood Logan Associates Inc., an Old Greenwich, Conn.-based venture annuities firm (*ccortese@woodlogan.com*).

He has looked at Java-based applications, "but our experience is they do not come even close to the power of Microsoft suites."

If Microsoft were behaving like a monopoly, Schmalensee said, it would be charging as much as $2,000 for its operating system instead of the $50 it now charges PC makers.

But Judge Thomas Penfield Jackson expressed skepticism and suggested through a question that a company may charge a low price now for "greater glory at some later time."

If Jackson decides that Microsoft isn't a monopoly, then the other allegations in the government's case — that it abused its monopoly power — will likely crumble.

"I would agree with their sense that a threat could emerge that would remove their monopoly power," said Rob Enderle, an analyst at Giga Information Group Inc. in Cambridge, Mass. "But until that threat becomes real, I find it difficult to sustain the argument that they are not behaving like a monopoly today." ◗

Users Say Market, Not Court, Will Decide Java Winner

Trial appears likely in Sun-Microsoft suit as early bench rulings favor Java inventor

BY KIM S. NASH

After 15 months of courtroom bickering between Sun Microsystems Inc. and Microsoft Corp. over the Java programming language, users are impatient but haven't slowed their Java plans. Users — not a judge — will decide which vendor ultimately "wins" the Java race, they said.

"With the amount of investment companies have made [in Java], whether Sun or Microsoft wins [in court] is inconsequential. The market will decide," said Manu Kumar (*manu@sneakerlabs.com*), the founder of PittJUG, a Java user group in Pittsburgh.

U.S District Judge Ronald Whyte has said Sun is likely to win the case as a whole. Yet the lawsuit shows no signs of coming to an end. No trial date has been set, and several other items in the case remain unresolved.

For example, Whyte last month asked Sun and Microsoft to hold a mediation conference to try to come to terms on at least one narrow issue: Microsoft's compliance with Sun's Java Native Interface. But the vendors have yet to agree on who should mediate, never mind when to meet.

Sun sued Microsoft for allegedly breaking its Java contract by writing language extensions that can run only on Windows.

So far, Sun has won two key rulings: Last March, Microsoft had to stop using the Java logo, and in November, Microsoft was ordered to revamp its Java products to comply with Sun's specifications (see chart). Microsoft is gradually redoing some products. Last week, it made available a free service pack for Visual Studio that it claims brings the tool kit into compliance. But Microsoft has appealed the November order, arguing the judge made several legal mistakes and misread the Java license agreement.

A Microsoft spokesman noted that "these are preliminary orders, not final rulings. Microsoft must have the right to innovate and improve our products."

No Settlement Seen

The chance that Microsoft will settle the case "is about as likely as Bill Clinton resigning," said Cynthia Jeness (*cj@goldencode.com*), an officer at the Atlanta Java Users Group.

Mike Morris, Sun's general counsel, said he's "very happy" with how the case has gone so far.

The legal dispute to date hasn't deterred Java users, nor will it, observers said.

Information technology programmers are more likely than third-party developers to use Microsoft's Windows-specific extensions, said Ron Rappaport, an analyst at Zona Research Inc. in Redwood City, Calif. That's because their companies often dictate which products they can use.

"Businesspeople are so concerned with safety, and going with Microsoft is like how going with IBM was in late 1970s," Jeness said.

That's the case for PittJUG members Aluminum Company of America and Mellon Bank Corp., Kumar said.

At Service Merchandise Co. Inc. in Brentwood, Tenn., programmers mainly use Java tools from NetDynamics Inc., which Sun acquired in July. But the retailer also employs some Microsoft products "to keep [us] familiar with both" approaches, said Robin Solomon, manager of PC application development.

The suit hasn't stopped many users from buying Java tools — Microsoft's or otherwise, Rappaport said. And even if Microsoft loses to Sun and is found to have sold tools that violate its Java contract, Microsoft customers aren't going to rewrite applications built with the offending products, he said. "The reality is, [IT people] can't reverse-engineer a year's worth of development simply because a court makes a decision," he said. ◗

The Java Suit, So Far

MARCH 1996: Microsoft licenses Sun's Java

MAY 1997: Internal Microsoft E-mail to Bill Gates talks about Sun's new version of Java, "which we're going to be pissing on at every opportunity"

OCT. 1997: Sun sues Microsoft for alleged contract and copyright breaches

NOV. 1998: Court orders Microsoft to revamp its Java products to comply with Sun's specifications. Court says it looks likely Sun will win the lawsuit

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BRIEFS

Chicago Outsources

The city of Chicago has hired Unisys Corp. to provide desktop and network services to city users, including the police, aviation and emergency services departments. The $75 million contract spans five years.

Outsource Pact Spurs Job Fair

This week, San Diego County's more than 300 information technology workers will attend a technology fair featuring seven bidders on the county's controversial $1 billion IT outsourcing contract. The vendors have guaranteed county IT workers at least 150 days of employment, but opponents decry that guarantee as far too little.

NASD Monitors Internet Stocks

The National Association of Securities Dealers Inc. (NASD) has formed a subcommittee to look into long-term ways to decrease the volatility of Internet stocks. One step NASD already has taken was to ask the Securities and Exchange Commission to push from five to at least 15 minutes the window before trading begins on an initial public offering.

I2 Profits Up

Supply-chain software vendor I2 Technologies Inc. reported a 70% increase in fourth-quarter 1998 revenue. Irving, Texas-based I2 said its revenue rose from $66.1 million in the last three months of 1997 to $112.7 million in the just-finished quarter. Profits were $8.7 million, up from $1.3 million in the 1997 quarter.

Short Takes

SUN MICROSYSTEMS INC. today launches its Jini technology, designed to let machines or applications work on a network without a special configuration. . . . IBM last week said Novell Inc.'s Network Service software is available for its OS/390 operating system for users planning to use multiple server applications on the mainframe.

RETURN POLICIES IRK ONLINE SHOPPERS

Integration of back-end systems with concrete stores key to building sales

BY BARB COLE-GOMOLSKI AND CAROL SLIWA

YOU NOW can buy just about anything online — but returning things is a different story. That process appears to be an undeveloped piece of a lot of electronic-commerce sites.

Although there's no evidence that shoppers are shunning Web stores because of that, observers said it could hurt online retailers over time.

Customers want to be able to get on a Web site and somehow let the company know that they are sending back a product. Instead, they may be required to pick up the phone and talk to a customer service representative. And if shoppers prefer to save shipping costs by returning their online purchases at a brick-and-mortar store, they often can't do that, either.

The schism between the return policies of online stores and their concrete counterparts results partly from a lack of integration between their back-office applications, observers said. In the case of Web-only companies, the inability to deal completely with the customer electronically may be a result of their fast growth, observers said.

"Today, you're dealing with [separate] systems, and it shows," said Jeff Narucki, an analyst at Progressive Strategies, a research firm in New York.

Shipping Refund

That can be a problem if, for instance, a customer orders three different products online and gets a discount on shipping.

When returning one of the three, the customer expects one-third of the shipping to be refunded. But if the Web system isn't integrated with the order-management system, "all those business rules won't be handled on the Web site," said Tom Hennings, CEO of Dover Pacific Computing Inc., a San Diego software company that helps companies implement online selling systems.

Barnesandnoble.com's policy is to provide store credit for any book bought online and returned in mint condition to its retail stores. But if the customer wants a refund, he will have to mail the book back. "If we were to do a full integration of the brick-and-mortar and online stores, we'd have to charge our online customers sales tax," said Benjamin Boyd, a spokesman for the company.

Growing Concern

In a survey of more than 2,300 online households released last week by Jupiter Communications Inc. in New York, concern over the ability to return merchandise was listed among the top five issues for online shoppers. The survey showed that 74% are satisfied with their online shopping experience, compared with 88% six months ago.

"The bar [for customer service] is continuing to go up as the audience becomes more mainstream," said Mark Johnson, a Jupiter analyst.

Robert L. Smith Jr., executive director of Shop.org., an industry group in Silver Spring, Md., said the return policies of many online stores are no different from those of catalog companies. "That doesn't mean improvements can't be made," he said.

Indeed, some online retailers are excelling in handling online returns. Companies with established catalog business such as Lands' End Inc. and L. L. Bean Inc. have been singled out as examples of companies doing it well. Recreational Equipment Inc. (REI) in Seattle, is another company that gets kudos.

When a customer orders merchandise online from one of REI's two Web sites, those orders are transferred overnight to the company's mainframe legacy system — which also is REI's main mail-order processing system, company officials said. The end result is that customers can discuss returns via E-mail or over the telephone and can return items to REI's brick-and-mortar stores with an invoice. ◗

Take It Back

Return policies and procedures of some popular online retailers:

COMPANY	POLICY
Sears	Customers can't return toys or gifts purchased online to retail stores
Starbucks	When sending back merchandise bought online, customers must call to arrange for pickup or pay the postage themselves
Victoria's Secret	Won't accept returns of online merchandise at its retail outlets

MORE THIS ISSUE
For more electronic-commerce news, see **page 34.**

'Human Touch' Crucial to Internet Retailers' Success

BY DAVID ORENSTEIN
NEW YORK

Traditional retailers at the National Retail Federation convention here last week seemed convinced that online stores are a must. But analysts and some retailers said a critical element of success will be porting the customer service and human touch from the real stores to virtual ones, not focusing just on technology.

"It is going to be just as it is in stores: It's going to be customer service that distinguishes companies from one another online," said David Bolotsky, an analyst at Goldman, Sachs & Co., before a huge audience.

An Ernst & Young LLP study of 1,363 households released at the convention found that security concerns and the need to handle products remained the big barriers to online shopping, but the next two concerns were that consumers couldn't talk to a sales representative and that they couldn't get enough product information.

Best Foot Forward

"What is fairly easy to do on the Web is to replicate your worst real salesperson," said Elizabeth Van Story, a vice president at Delray Beach, Fla.-based Office Depot Inc.'s OfficeDepot.com. "The challenge is replicating your best salesperson."

The company designed its site to help customers narrow down product choices in some cases and see alternatives in others. And some of its catalog call center staff are trained to handle questions about the site.

"It's nice that they can get to a human," Van Story said.

On the Web site of Seattle-based Nordstrom Inc., a department store chain whose off-line model is based largely on strong customer service, consumers can use a personal shopper via E-mail in a service called Nordstrom Personal Touch, said Bob Schwartz, Nordstrom's Internet general manager. The shoppers will even snap pictures of merchandise with a digital camera for the customer, he said.

Catalog retailer J. Crew Inc. this past holiday season guaranteed customers a within-24-hours response time for E-mail, said Brian Sugar, J. Crew's director of new media. J. Crew dedicated three employees to the task and supplemented their efforts with free time from hundreds of other representatives, Sugar said. ◗

Retailers Adopt Different Strategies for Installing SAP R/3

BY CRAIG STEDMAN

The Home Depot Inc. and CompUSA Inc. are the latest retailers to take the plunge with SAP R/3. But the two companies have very different strategies for installing the ERP software.

CompUSA, a $5 billion computer retailer in Dallas, last week said it plans to roll out all of R/3's core enterprise resource planning (ERP) modules, plus SAP AG's retail and data warehousing add-ons over the course of 18 months.

Home Depot is being more methodical: The $30 billion home-improvement chain first will install SAP's finance, logistics and warehouse management software to help run new stores in Argentina that are expected to open in the first half of next year, said Ron Griffin, Home Depot's CIO.

The next stop for the software would be Chile, where the Atlanta-based company already has several stores. A timetable for installing the financial applications in the U.S. hasn't been set. And Griffin said Home Depot still needs to evaluate the idea of using the logistics and warehouse management pieces of R/3 domestically.

A rollout of SAP Retail, designed to handle merchandise management and other key retailing functions, is also in the planning stage and "would probably be a couple years" down the road, Griffin added.

That kind of phased deployment is routine for Home Depot. "We think it's more important to do things right than to do them in a predefined time frame," Griffin said. "And our business isn't going to hit the wall with our current systems."

But he noted that Home Depot also wants to see more functionality before installing SAP Retail, which has gone live at only two U.S. companies.

For example, Griffin said, SAP Retail couldn't handle Home Depot's system of letting each store place its own product orders with suppliers. The retailer also wants to work with SAP to improve the software's support for customizing product mixes at stores and tying retail reporting to R/3's finance modules, he said.

A conservative installation plan makes sense for a big retailer like Home Depot that doesn't have a pressing need to replace its mainframe systems, said Jim Shepherd, an analyst at AMR Research Inc. in Boston.

"A Saturday afternoon at a thousand Home Depot stores would mean a staggering transaction workload," he said. "And it's not like you can look around at SAP's retail customer base and see another company that's running that kind of load now." ◗

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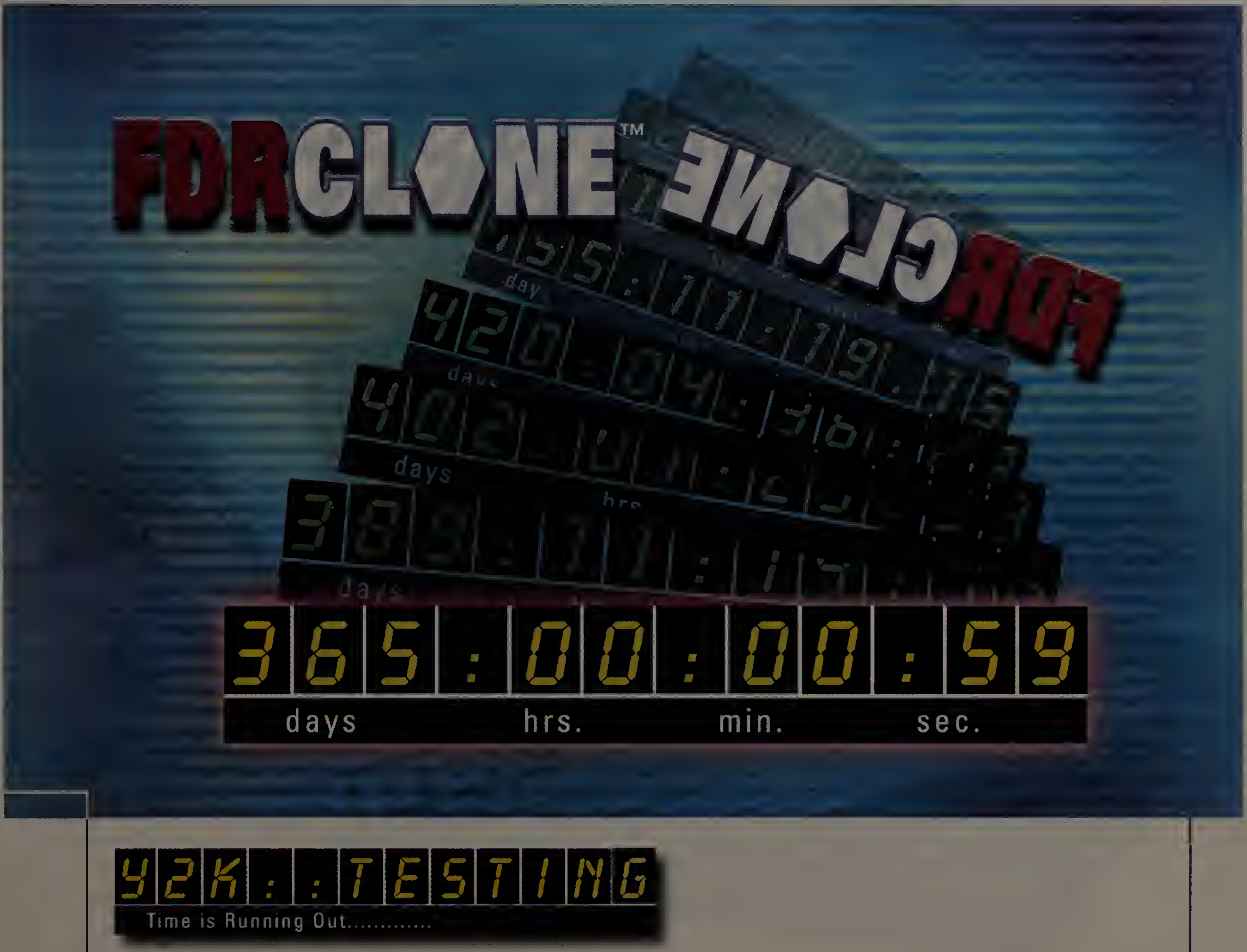

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NT Apps to Speed Super Bowl Stats to Screen

BY DAVID ORENSTEIN

The second that Denver Broncos running back Terrell Davis breaks 100 yards or Atlanta Falcons quarterback Chris Chandler passes for 300, Fox Broadcasting Co. will use IT to put the stats on your TV this Sunday. The network uses a series of Windows NT 4-based applications to make its sports broadcasts as fast as the sports themselves. "The whole idea here is to put as much information into the hands of the [commentators] as possible and to get it on the air as fast as possible," said Regina Gifford, executive director of systems at Fox. During the Super Bowl, those graphics popping up on the screen with all kinds of numbers about yardage, tackles and time of possession are served up courtesy of an application developed for Fox by Sports Media Technology Corp. in Raleigh, N.C.

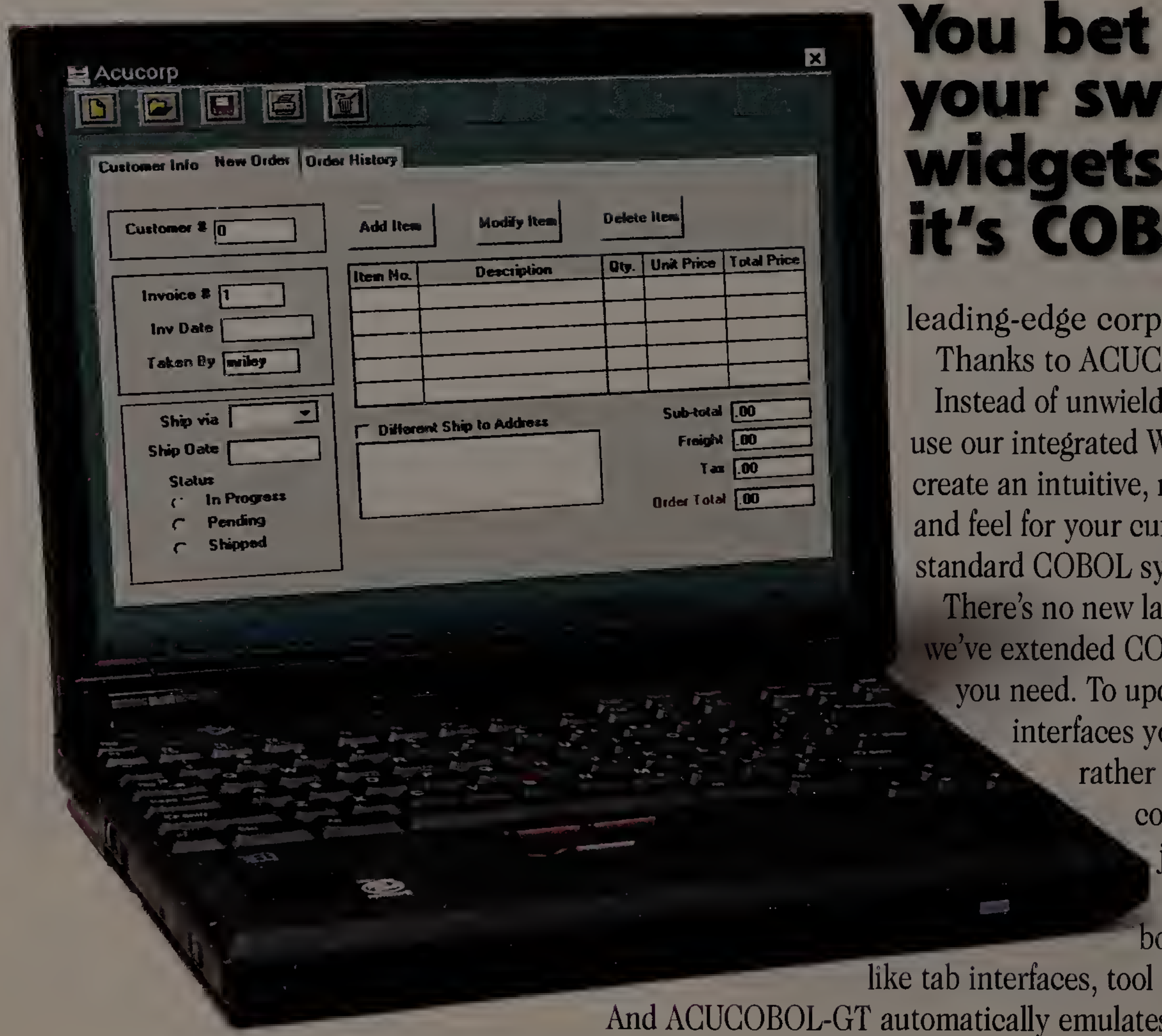
> The whole idea here is to put as much information into the hands of the [commentators] as possible.
>
> REGINA GIFFORD, FOX BROADCASTING CO.

That application can collect real-time data from the scoreboard with a device called a Fox Box and supplement the information with data about each play collected by people called spotters. The data zips to the broadcast truck where it is housed in a proprietary database. Broadcasters can select any report they want whenever they want to put up-to-the-second information on millions of TVs.

During the regular season, Fox Boxes in each National Football League stadium let Fox broadcast real-time scores of all the other games around the league, complete with ticking clocks that mirror the scoreboard at each game. The application was developed this year in Visual Basic in four months by M1 Software Inc. in Santa Monica, Calif.

Meanwhile, at Fox's studios in Los Angeles, the network combines the play-by-play data collected at each game it's broadcasting with similar data provided by the NFL from a server based in Minnesota. The data is processed in memory for optimum speed and backed up in a Microsoft Corp. Access database.

Fox soon will begin integrating the systems, Gifford said. The network's goals include providing the real-time information via the Web. ▶



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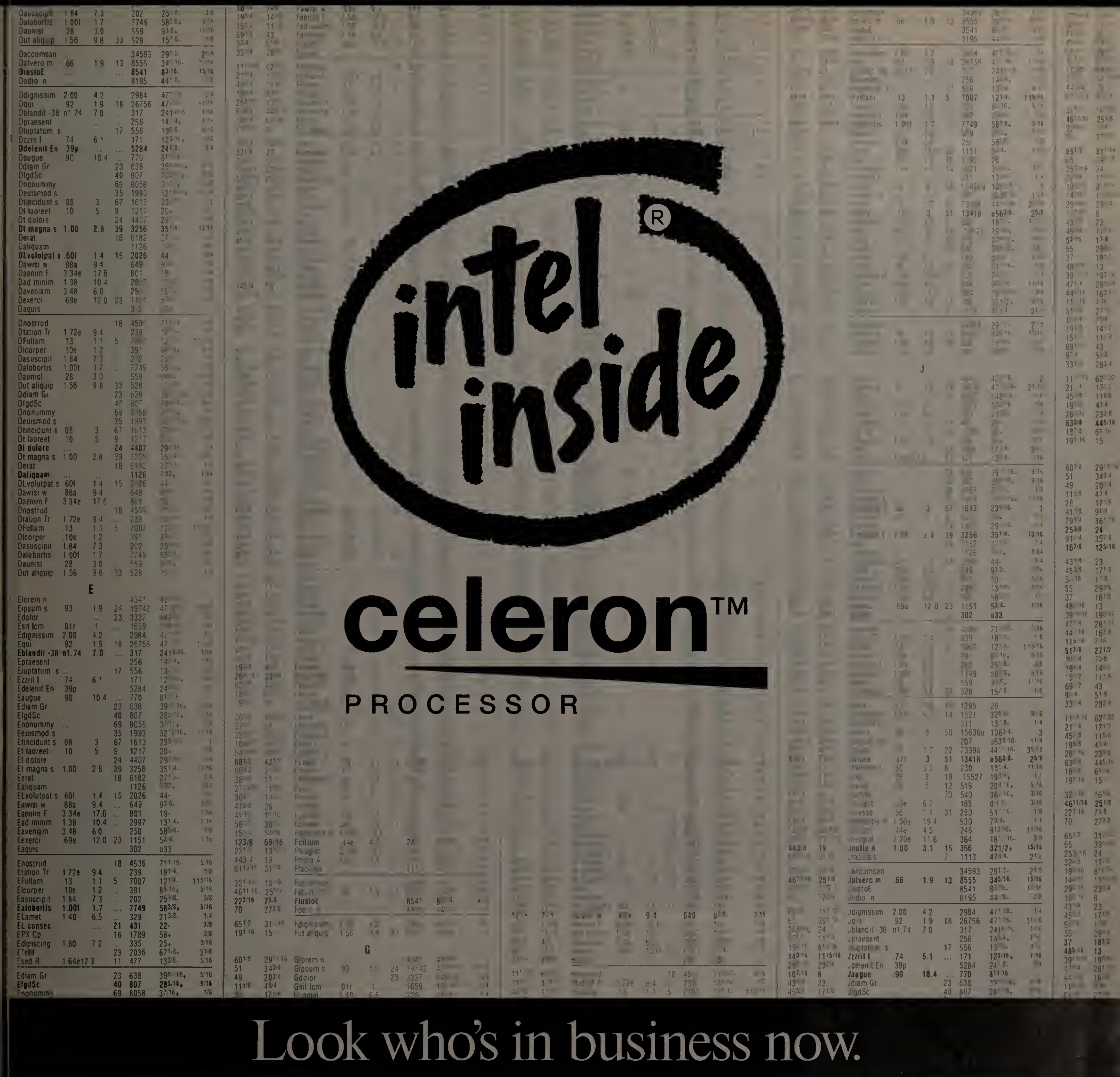

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CC:MAIL USERS GET THE MESSAGE TO MOVE ON

Lotus Notes update suggests end to support

BY ROBERTA FUSARO
ORLANDO, FLA.

LOTUS DEVELOPMENT Corp. hasn't set the date when it will stop formally supporting CC:Mail, but users of that messaging platform last week said they get the idea: It's time to move.

"Version 5.0 of Notes means the final shoe has dropped," said Dan Smart, a systems architect at Vulcan Chemicals in Birmingham, Ala., a 1,000-user CC:Mail shop. "It's either move up or move on."

One big clue: None of the software's creators or original product managers was at Lotusphere 99, Smart noticed.

JUST THE FACTS

CC:Mail Stats

- **There were 14 million CC:Mail seats at the end of 1997; that number declined at a rate of 50,000 seats per month**
- **Of those who have migrated, Lotus kept about half. Lotus says about 80% of current CC:Mail users are planning to switch to Notes**

SOURCES: "ELECTRONIC MAIL AND MESSAGING SYSTEMS" NEWSLETTER; META GROUP

Mike Wright, a systems administrator at the St. Petersburg Times Publishing Co. in St. Petersburg, Fla., said he was at Lotusphere specifically to find ways to move his 1,250 users off CC:Mail. The company has been using a year 2000-compliant version of the product for a while now but wants to gain workflow, calendaring and scheduling features available in Notes and Domino.

"I have never had a problem with support for CC:Mail to this point [and] always got updates when I wanted them," Wright said. But when you move to a client/server setup, Notes does things that CC:Mail can't, he said.

According to the "Electronic Mail and Messaging Systems" newsletter, there are 13.5 million CC:Mail seats and about 10 million Microsoft Mail seats (see chart).

At one Lotusphere session here, officials demonstrated the newer CC:Mail clients and previewed Version 8.5, which is due in the second half of this year or early next year. But Matt Cain, an analyst at Meta Group Inc. in Stamford, Conn., noted that the only enhancements to CC:Mail seem to be features that assist the move to Notes and Domino.

The company agreed. Lotus officials last week said CC:Mail support will continue into 2002 but couldn't offer specifics about the product road map after that.

Instead, Lotus announced its SmartMove program, a bundle of tools and services — from Lotus, IBM and business partners — designed to help users move from host-based and LAN E-mail systems, such as CC:Mail, IBM's OfficeVision, Microsoft Mail and Fischer/TAO, to Notes and Domino. ▶

Linux Redux

Add Lotus to the growing list of supporters of Linux, the open-source, Unix-like operating system.

Lotus Development Corp. President and CEO Jeffrey Papows last week said the company will ship a Linux version of its Domino 5.0 messaging and application server by year's end.

At Lotusphere Berlin last fall, Papows dismissed support for Linux, citing a lack of customer demand and questioning the need for another flavor of Unix. But those comments produced a backlash from users, including some hate mail, which explained the turnabout, Papows said in his Lotusphere keynote speech here last week.

Several users here said they're experimenting with Linux in test environments but would welcome a Linux version of Domino.

"Everyone was wondering when it was going to happen anyway," said Chip Brown, a systems engineer at AT&T Corp. The Linux move broadens Lotus' reach in to the market, he said. "They're trying to hit every platform that makes sense, and Linux is a big one. And you don't have to pay Bill Gates to run it," Brown said.

– Roberta Fusaro

Users Hope Delay of Notes Update Means Cleaner Code

Groupware upgrade to ship next month

BY ROBERTA FUSARO
ORLANDO, FLA.

Users at last week's Lotusphere 99 here were disappointed to find that the company won't ship until February Version 5.0 of Notes/Domino, the much-anticipated and much-delayed collaboration software.

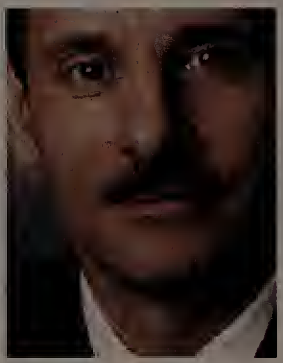
But many said they are willing to wait a few weeks if it means a "less buggy" release.

And the delay matters even less to larger corporations that won't upgrade until after their year 2000 technology lockdowns — likely in the second and third quarters this year.

Lotus originally was slated to ship Notes and Domino 5.0 late in 1997, then in the first half of last year and then by the end of last year.

Many users expected the ship date to coincide with the annual user conference. But in his keynote address, Lotus Development Corp. President and CEO Jeffrey Papows promised that the groupware client and server will ship in February after a few more weeks of quality assurance testing.

"It's more exciting to come here and have the big announcement," said Larry Blomquist, a senior software specialist at American Express Technologies in Phoenix. "But we're not ready for [Release 5.0] anyway. We don't buy Version 'x.0' of anything. We have some infrastructure issues to deal with before we're ready to upgrade, and there may be some year 2000 issues, too."


LOTUS CEO JEFFREY PAPOWS promises a ship in February

Chip Brown, a systems engineer at AT&T Corp., said he also was a little disappointed that the software wasn't available at Lotusphere. "But if it cuts down on bugs and my headaches when installing it, I guess I can wait a couple of weeks," he said.

Steven B. Weissman, president of research firm Kinetic Information in Waltham, Mass., agreed with the decision to delay release of the feature-rich product. "Making a deadline for the sake of making a deadline is stupid," he said. Features in the new Notes and Domino include improved administration tools and native Internet messaging. ▶

Pentium III to Build In Security Features

Intel chip a boon for online transactions

BY SHARON GAUDIN
AND APRIL JACOBS

Intel Corp. wants to create a "trusted PC" by building security features in to its forthcoming Pentium III processors.

"This could make a big difference in security," said Brian Moses, an assistant vice president at Lombard Canada Inc., a Toronto-based insurance company. "People have a lot of trouble adding security software on top of their systems, and this would spare them some of that. And Intel is so big and widespread that there would be a universality about any security built right in to their chips."

Larry Dietz, an analyst at Current Analysis Inc. in Sterling, Va., called this an important step in making online transactions more secure. "Sure, you'll still need security software, but the basics will be taken care of in the silicon. That makes it easier, and because it's right there in the processor, it should be faster and more efficient," he said.

Intel is working with RSA Data Security Inc. to develop security-enhanced hardware and software. San Mateo, Calif.-based RSA is designing components and tools that will work with Intel's new hardware.

It has no plans to bring that technology into existing Pentium processors or PCs.

Each Pentium III will have its own identification number built in to the core and will identify the processor and the PC when a user connects with another site or system.

Intel also plans to create a random-number generator based on thermal emissions from the silicon in the processor. It would be used to generate an encryption key. ▶

JUST THE FACTS

Beefing Up

Intel and RSA Data Security joined to boost the security of future PC chips. Here's how:

- **Intel will place a serial number in each microprocessor**
- **Intel will create a random-number generator In the chip**
- **RSA Is designing components and tools that will work with Intel**

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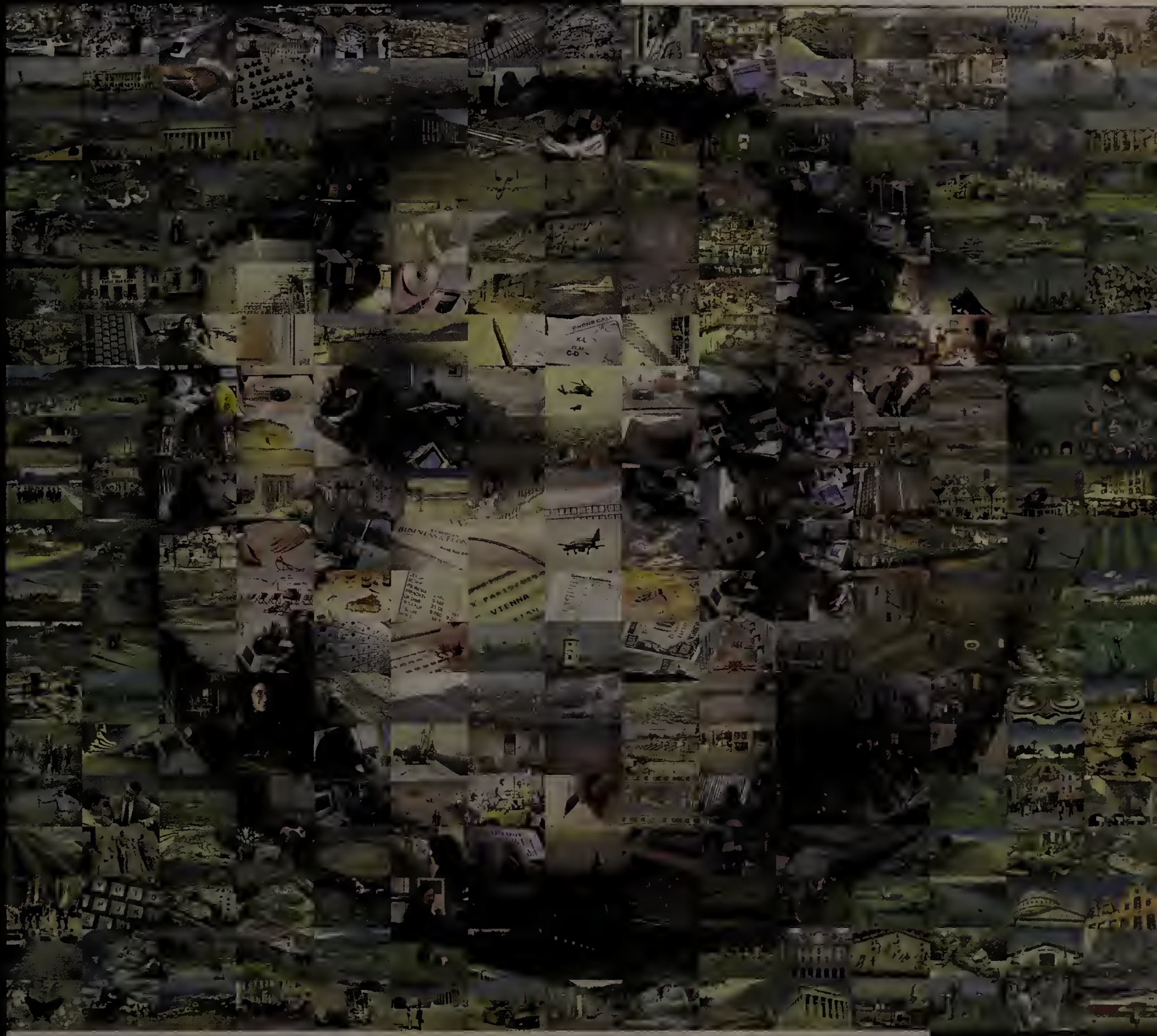

It was one of the most visited Web sites of all time. In all, the France '98 site, powered by software from Sybase, generated over 1.5 billion hits from more than 170 countries. Shoppers purchased World Cup merchandise via an e-commerce store that averaged over 760,000 hits per day. Journalists and staff members relied on an intricate intranet to access valuable, timely information. From the Web to e-commerce to intranets, France '98 was a global success, and one that we can replicate for businesses like yours. With our proven technology, we can create complete Web solutions that enable your company to bring together and distribute mountains of information to provide the competitive advantage you need to achieve your organizational goals. To learn more about the success of the France '98 Web solution and what we can do for your business, visit www.sybase.com/worldcup or call 1-800-8-SYBASE (Ref. CPCW4).

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BRIEFS

Microsoft Posts Bug Patches

Microsoft Corp. has posted patches on its Web site for recently discovered security weaknesses in Word 97 and Version 2.0 of the Microsoft Forms ActiveX Control. Microsoft said it expects this week to post a patch to fix a bug that could let a user access any file on a FrontPage Personal Web Server when the server is being used as a live Web server and running on Windows 95 and 98.

Compaq to Unveil StorageWorks RA800

Compaq Computer Corp. today is slated to unveil its first big storage offering since its takeover of Digital Equipment Corp. The new systems, Fibre Channel disk arrays, can connect with multiple server platforms. Pricing for the StorageWorks RA8000, a stand-alone RAID Array with a 1.3T-byte capacity, starts at $68,000. (See story on Compaq/Digital merger on page 1.)

Bankers Issue Y2K Warning

The Swiss Bankers Association has advised members not to handle any payment orders – including stock exchange transactions – over the four days that straddle the dawn of the year 2000. The recommendation wouldn't affect automated cash machine withdrawals or credit-card transactions. Member banks can settle their year-end accounts and correct any defects that may occur.

Short Takes

SUN MICROSYSTEMS INC. today will officially launch its Jini technology and announce partners that will be making Jini products. . . . INTEL CORP. will invest more than $30 million in videoconferencing equipment maker PICTURETEL CORP. as part of a joint product development pact. . . . ORIGIN TECHNOLOGY IN BUSINESS INC. in Dallas will take over management and maintenance of Ann Arbor, Mich.-based PHILIPS DISPLAY COMPONENTS CORP.'s SAP R/3 software under a three-year, multimillion-dollar contract.

FDX Opts for Oracle8 DB

Some see move as step away from Sybase

BY STEWART DECK

FDX Corp. has caused a bit of a database stir by announcing it will soon begin using Oracle Corp.'s Oracle8 database as the foundation of its global information systems rather than a system from Sybase Inc., whose database tools FDX had earlier standardized on.

In recent years, Emeryville, Calif.-based Sybase has struggled to stay profitable, and when a large user such as Memphis-based FDX, which owns Federal Express Corp. and several other delivery companies, adopts a competing company's product, other users take notice.

FDX has taken pains to say its decision doesn't mean a move away from Sybase. "Sybase is a valued supplier and a key player in many strategic . . . and operations systems under development," said Robert Carter, FDX's chief technology officer.

Sybase provides the underlying database technology for FedEx FullView, a logistics application for package content; FedEx World, a multilanguage shipping application; and FedEx Signature Release, a package information system, he said.

FedEx is also looking at Sybase's mobile and embedded database technology for synchronizing laptops, handhelds and pagers for its mobile workforce.

FDX CTO Robert Carter still calls Sybase a "valued supplier"

But FDX chose Redwood Shores, Calif.-based Oracle's database to be the core of a new global information system that gives its internal users quick access to customer information in its various tracking systems.

To do that, FDX will build several data marts of customer information to help better target its sales efforts.

Merv Adrian, an analyst at Giga Information Group Inc. in Cambridge, Mass., said this deal shows that FDX isn't "letting company standards policies become an impediment to achieving the right fit."

Sanjeev Varma, an analyst at Stamford, Conn.-based Gartner Group Inc., said Sybase may begin attracting more customers with its mobile database technology, but it will likely lose out on more of the corporate enterprise database deals because it can't offer as much as rivals Oracle, IBM and Microsoft Corp. ◗

MICROSOFT HEEDS CRY FOR CHANGE

Cost, license facelift for Terminal Server

BY APRIL JACOBS

Bowing to user complaints, Microsoft Corp. said it is cutting prices and simplifying licensing for its Windows NT 4.0 Terminal Server operating system starting next week.

Users see Terminal Server, a multiuser version of Windows NT, as a cheaper desktop alternative to Windows NT workstation or Windows 98 because it allows network administrators to tightly control users' desktops and centrally maintain operating system and software.

The changes include lifting a requirement that all Terminal Server clients also be licensed with NT Workstation, which retails for up to $250. Now, Microsoft will require users to get a Terminal Server Client Access License, which costs $109 (see chart).

Microsoft also will sell Internet connector licenses to companies that use Terminal Server to host a Web site. The license, which costs $9,999, allows access for up to 200 concurrent users. That frees companies from having to make sure that outside users accessing their Internet site also have a Terminal Server client.

John Byrne, vice president of distributed technology at Baltimore-based Mercantile-Safe Deposit and Trust Co., said the new licensing scheme isn't just simpler to keep track of, but also less expensive.

Costs Come Down

Windows Terminal Server licensing costs:

Windows Client Access License: **$109**

File and Print License: **$39**

Concurrent License for Internet-based nonemployee users (supports up to 200 users): **$9,999**

SOURCE: MICROSOFT CORP., REDMOND, WASH.

"We are so pleased, because we were one of the voices crying, 'Please change this,'" Byrne said. With the new licensing scheme, Microsoft "has broken it down to the point where it makes sense," he added.

Mercantile-Safe Deposit has almost 1,000 users with Terminal Server, and Byrne said eliminating the need to license NT Workstation will save him $200 per user per year.

Bill Bayer, manager of information technology at Komatsu Canada Ltd., a heavy equipment maker in Mississauga, Ontario, said the complexity and expense of the old licensing scheme may have scared potential adopters away. "This was mainly a money issue they were having, and they will accelerate deployment of Terminal Server," he said. ◗

Cisco Move May Spur VPNs

BY BOB WALLACE

The virtual private network strategy Cisco Systems Inc. unveiled last week is the most complete scheme for letting users securely send data over public networks such as the Internet, industry analysts said.

Although virtual private networks (VPN) were expected to take off last year, most large users expressed reluctance to use Internet VPNs, citing security, performance and control concerns.

But users are expected to start warming up to VPNs — and Cisco's package of hardware add-ons and routing and management software should help that happen, analysts said. "Momentum is building, and I expect business-to-business E-commerce to be a big driver," said John Morency, an analyst at Renaissance Worldwide Inc. in Newton, Mass.

Today, most VPNs are used to cut the cost of supporting remote workers and international offices rather than to replace dedicated networks. However, the auto industry is using a VPN, the Automotive Network Exchange, to tie automakers to their suppliers [CW, Sept. 7].

The Cisco announcement has swayed at least one user toward VPNs. The United Network for Organ Sharing in Richmond, Va., is considering a VPN to replace its existing network, said Berkeley Keck, the agency's information technology director. "Cisco's combination of hardware and software would help us meet all our needs," he said.

Cisco is far from the only major networking vendor pitching VPN offerings. 3Com Corp., Northern Telecom Ltd.'s Nortel Networks division and Cabletron Systems Inc. all sell various VPN components, as do smaller, lesser-known companies. ◗

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Y2K CRUNCH TIME IS HERE FOR RETAILERS

Firms must assure supply-chain readiness

BY DAVID ORENSTEIN
NEW YORK

RETAILERS soon must begin placing orders for products to be delivered early next year. So some are getting more aggressive in seeking answers about the year 2000 compliance of the supply chain that merchandise will move through.

At the National Retail Federation conference here last week, retailers said the best they can do is find the most vital links and target them heavily. But questions about the supply chain's readiness remain.

"If you want to do business with us, you've got to demonstrate in some tangible way that you are going to be ready," said Barbara McIntyre, director of administration for year 2000 conversion at ShopKo Stores Inc. in Green Bay, Wis. ShopKo's efforts to contact suppliers in writing have often yielded only boilerplate responses, she said.

Brian Hume, president of Martec International Inc., an Atlanta-based retail consulting firm, said many small but important retail suppliers are going to answer that they are compliant even if they don't know what it means to be ready for the year 2000.

Betty Gruber Smith, director of MIS at Guess Inc., a clothier based in Los Angeles, said the company is paying personal calls on suppliers overseas to determine their year 2000 compliance. But the retailer is trying to avoid cutting off well-established relationships with manufacturers that aren't ready. "Quality is a big concern," Smith said, and dropping long-time vendors because of year 2000 concerns would mean resorting to less familiar vendors.

As a contingency plan in its logistics operations, Belk Inc. in Charlotte, N.C., is evaluating United Parcel Service of America Inc. and FDX Corp.'s RPS as carriers for small packages, said Michael Rescigno, the department store chain's transportation services manager. But other firms are doing the same and also want to be at the front of the line, he said.

Some retailers have found reason to be cautiously optimistic. "The nightmare of any logistics executive is to wake up on Jan. 2 and find out that you cannot move merchandise," said Dennis Smith, senior vice president of logistics at Dayton Hudson Corp.'s Mervyn's California department store chain. "We think we have it fixed." ▶

TIP BOX

Y2K and the Supply Chain

Contact vendors by mail. Don't be discouraged by a low rate of return; a mailing serves to heighten awareness.

Contact vendors by phone or in person. Companies seem more willing to share information about readiness this way, and it doesn't require them to commit in writing.

Prioritize your vendor list. Consider replacing those that won't be ready.

Make sure EDI translators are year 2000-compliant.

SOURCE: COMPUTERWORLD INTERVIEWS

Continued from page 1

Windows 2000

with Windows 2000 this year," said Rob Enderle, a vice president at Giga Information Group Inc. in Cambridge, Mass. "Windows 95 and 98 were both midyear releases. I don't see a difference in the timing of Windows 2000, and there's a lot more going on this year than ever before — Microsoft's developers may have to deal with emergency Y2K situations. And don't forget that this is the most complex product they've ever come out with."

Michael Silver, an analyst at Gartner Group Inc., said he too isn't expecting a release until well into the first half of 2000. And he's telling clients not to deploy the operating system until the first service pack is released, so that may push any deployment possibilities back another six months.

The reason may be that many users say they have no intention of buying Windows 2000 until they have gotten through the year 2000.

"Is it going to have an impact on us? None whatsoever," said Jeff Miller, senior enterprise network engineer at the Chicago Mercantile Exchange. "We've already locked our doors because of Y2K. I'm not bringing anything that big in here until we get through that."

"This is a highly complex system," said Mike Riley, director of Internet application development at R. R. Donnelley & Sons Co. in Downers Grove, Ill. "We can't bring this in unless we're completely ready, and I've got to see what Y2K brings us."

And while Microsoft says NT 4.0 is a good option for users who need NT but are waiting for Windows 2000 (previously called NT 5.0), industry watchers said locked corporate doors may bar sales of that as well.

And there are other ripple effects, Enderle said. Microsoft could face "a fairly significant problem in terms of revenue" next year. "Our customers, which are Fortune 1,000 and Fortune 500, are not going to move to Office 2000 until they get Windows 2000. The same will probably go for the BackOffice suite, too. . . . I have a hard time seeing Microsoft having anywhere near the growth they've had in the last few years," he said.

Microsoft last week reported net income of $1.98 billion for the quarter ended Dec. 31, a 74% increase over the same quarter in 1997. Revenue for the quarter totaled $4.94 billion, a 38% increase from a year earlier.

Windows NT sales last year rose to 1.56 million licenses, up from 1.22 million in 1997, according to International Data Corp. ▶

Going Vertical

Sample of business-to-business electronic-commerce Web sites

SITE	WHAT IT SELLS	VITAL STATS
www.chemdex.com (Oct. '98 debut)	Chemical andbBio-chemical reagents	300,000 products; 130 suppliers
www.netbuy.com (June '98 debut)	Electronic components	$1.5B in inventory; more than 1,400 suppliers
www.metalsite.com (Dec. '98 debut)	Steel	$25M to $30M in sales per month projected
www.agrimall.com (Nov. '98 debut)	Farm equipment, real estate, livestock	$100M in inventory; 150 sellers

Continued from page 1

Portals

a needed part. In some cases, there might be an 18- to 20-week lead time to get it.

But using the NetBuy portal, Child said, he can search 53 distributors in 30 seconds, find out instantly if the part is in stock and order it.

Some observers suggest that companies might be reluctant to buy goods this way. Childs said, for example, that he will use NetBuy for only about 5% of his company's purchases.

Hot Properties

But third-party companies, like AgriMall.com for livestock and farm gear and biochemical supplier Chemdex Corp. setting up vertical market electronic-commerce and information sites, will be one of the fastest-growing categories on the Web, according to Volpe Brown Whelan & Co.

The San Francisco-based investment bank predicts that the amount of purchased goods that go through such third parties will shoot from $750 million this year to $211 billion by 2002. In that year, these "infomediaries" stand to make $20 billion in transaction fees and advertising, the firm said in a report last week.

The reason? Buyers want one-stop shopping, complete and accurate information and trusted advice. Because they can't expect to get that from vendors with vested interests, growing numbers of third parties will set up portal sites in vertical markets, said Charles Finnie, an analyst at Volpe Brown.

"The major shift that occurs on the Web in commerce is that power shifts from sellers to buyers," Finnie said. The advantage is twofold: Buyers can access more data to help them negotiate price and can abandon one seller for another on the Web for little or no cost.

"From the scientist's point of view, we always want something that won't take up much of our time because we'd rather spend it at the lab bench," said Chemdex user Kim Ha, a scientist at Eos Biotechnology Inc. in South San Francisco.

On the Chemdex site, passwords can trigger automatic entry of information in purchase order forms such as the proper cost center, and business rules can preset spending limits and approval cycles.

Genentech Inc., a South San Francisco biotechnology company that helped Chemdex set up the system, uses Chemdex software that lets it enforce negotiated pricing with preferred suppliers. "What we're doing fundamentally is making a very efficient market where it's been inefficient," said David Perry, president of Chemdex.

Valuable Connection

The more fragmented the vertical market, the more likely that the business-to-business vertical portal will succeed, analysts said. For instance, buyers and sellers often have a hard time connecting in an industry such as biochemicals or electronics because there are so many specialized areas.

Yet buyers have been slow to catch on. "A lot of buyers are still wondering if this is the best way to buy goods," said Erina DuBois, an analyst at Dataquest in San Jose, Calif.

Genentech, for instance, expects only half of its research-and-development spending to be done via Chemdex because its major supplier isn't listed on the site, said purchasing director Jim Latimer. ▶

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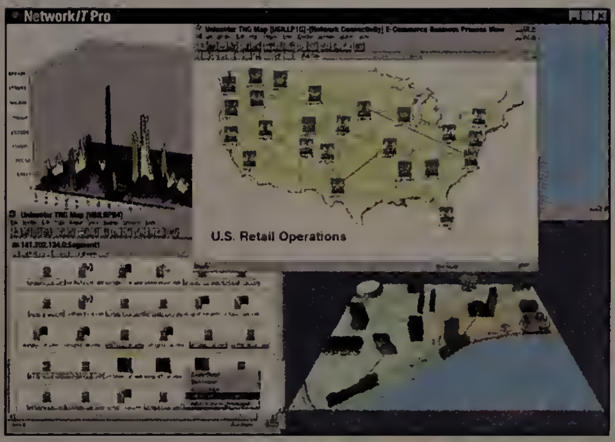

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IT Doing Less Development, More Installation, Outsourcing

**BY JULIA KING
AND BARB COLE-GOMOLSKI**

Forget software development — corporate information technology groups are busy installing packaged business applications, integrating other off-the-shelf software and managing outside service providers. And when they're doing new software development, you can bet it involves Internet technology.

Those are among the findings from a Meta Group Inc. survey of 426 companies.

Last year, corporate IT groups spent 33% less time and money on traditional software development and maintenance. Outsourcing increased 42% during that year, while work on packaged applications increased by a factor of three.

"One big theme we see is the metamorphosis of the IT organization from software developer to systems integrator," said Howard Rubin, a Meta Group research fellow.

That's the case at Akzo Nobel Inc., a chemical company in Chicago. "We are in the process of implementing packaged solutions like SAP to replace all of our homegrown software," said Bram Reinders, information manager. "Our strategy is to use packages wherever possible."

No Rest for the Weary

The shift to packaged software hasn't necessarily meant less work for IT. Last year, the number of hours worked per year increased by almost 2%. At the same time, IT staffers saw their training days drop from an average of 8.2 in 1997 to 7.4 last year.

Because of the Internet push, network and Internet staff continue to be hot hiring areas, but programmers are the hardest to recruit, the Meta survey showed.

At Akzo Nobel, most new development is primarily around the Internet, Reinders said. Spending on Internet technology at the company has doubled every year since 1996.

But overall, Meta found that IT budget growth is slowing. From 1997 to 1998, IT spending as a percentage of gross revenue grew by a mere 0.2%. That compares with a 5.1% increase from 1996 to 1997, Rubin said. Similarly, IT salary increases slowed last year to 5%. At the same time, staff turnover — which had been increasing over the past few years — decreased by 0.5%. "Opportunistic job-hopping appears to have leveled off," Rubin said.

Jenni Lehman, an analyst at Gartner Group Inc. in Stamford, Conn., said turnover may have leveled off because many IT professionals are on year 2000 projects and have been offered incentives to complete the work.

"Like a wartime workforce, loyalty may have kicked in," she said. ◗

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ERP Apps Promise Profit Analysis, But Prove Complex

BY CRAIG STEDMAN

ERP vendors are starting to launch high-level business analysis applications designed for senior executives who want to figure out how to maximize corporate profits.

But much of the technology being promised by the likes of Oracle Corp., PeopleSoft Inc. and SAP AG is still in the formative stages. And users who adopt the software often have to master new ways of looking at their businesses — a process that can be complex and require big changes internally.

For example, since late 1996, Foremost Farms USA has been using an activity-based costing application that Oracle bought last year. The software already has paid for itself by giving the Baraboo, Wis., dairy cooperative a more accurate picture of what it costs to produce items such as milk and cottage cheese, said corporate controller Mark Graupman.

But the application is running at only one of the three plants in its fluid products division, in part because the software-based accounting model created by the cooperative "is too complicated and [requires] too much capturing of data," Graupman said.

Running "what-if" analyses can be unwieldy as a result, Graupman said. The cooperative is simplifying its accounting model in preparation for widening the software's use.

Oracle last week announced plans to meld the costing software with a "balanced scorecard" application that measures corporate performance in different categories, plus two other analysis applications that are due out in early 2000.

PeopleSoft this month began to ship the first members of a similar analysis suite. And SAP, the top dog among vendors of enterprise resource planning (ERP) applications, said strategic-analysis software it's developing should be ready for testing by a small number of users in April or May.

But much is still to come.

Oracle said a common Java-based user interface for its tools won't be ready until late this year. PeopleSoft has the same schedule for a simplified user interface that can be tailored for different users, plus more applications to round out its suite. SAP is still hashing out how to stage development of the different analysis tools it has promised.

Thermo King Corp. also uses Oracle's activity-based costing software. Measuring costs based on production steps, such as the number of machine operations, is much more accurate than simply tracking the time put in by workers, said Mark Sanquist, a senior systems analyst at the Minneapolis maker of refrigeration systems. But installing the software "was a major effort" for Thermo King's plants, he added. ▶

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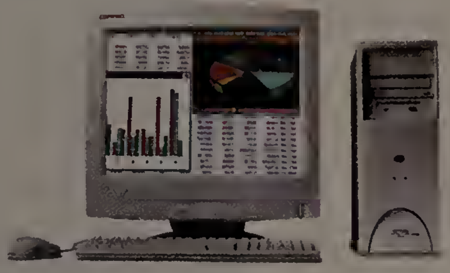

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USERS DISCOVER DARK SIDE OF HELP DESK OUTSOURCING

Bad contracts lead to endless frustration

BY JULIA KING

NO MATTER what his question was or who picked up the phone to answer it, Handleman Corp. CIO Bill Stapleton got the same song and dance whenever he called his company's outsourced off-site help desk.

“They'd tell me it sounded like a communications problem and that communications was not their problem. ‘Check with your own people,’ ” he recalled.

HELP DESK 2000'S Peter McGarahan says “help desks ideally need to be staffed with subject-matter experts”

ART ROSSER

Instead, Stapleton demanded that the outsourcer locate its help desk workers on Handleman's premises. That way, he said, information technology workers from the two companies could “sit next to each other, eyeball-to-eyeball, to figure things out in a few minutes rather than hours.”

Now, he's going a step further. He plans to fire the outsourcer and bring the help desk back in-house at the $1 billion, Troy, Mich.-based music distributor.

Stapleton isn't alone. More than 15% of 200 large companies surveyed are dumping their outsourced help desk workers because of poor performance, according to research by Meta Group Inc. in Stamford, Conn.

And Forrester Research Inc. in Cambridge, Mass., uncovered a similar trend in a 1998 survey of 50 help desk managers at Fortune 1,000 companies. “For every company I talked to that's hiring an outsourcer, I talked to another that is bringing the help desk back in-house [because of] vendors' poor performance,” said Forrester analyst Matthew Nordan.

Chief among users' complaints are that outsourcers' failure to learn their business prevents them from answering users' questions. Consequently, calls are bounced back to customer companies. The result is a loop in which frustrated end users are left in the lurch or have to figure things out for themselves.

“In addition to technicians, help desks ideally need to be staffed with subject-matter experts so when users call with questions about how an accounts-payable module is used at a company, there's someone who knows that from a subject-matter standpoint,” said Peter McGarahan, former help desk manager at Taco Bell Inc. McGarahan now is senior executive director of Help Desk 2000, an Atlanta-based membership organization for help desk professionals.

In other words, an outsourcer's knowledge of the client's business environment is important. At Bank of America in San Francisco, for example, a single broken printer can add up to more than $1 million in lost business per day.

“Loans and mortgages are a key business for us,” said Brenda Iniguez, systems manager. “To a big outsourcing company, one printer may not be a big deal. But the internal help desk here would characterize that as a ‘Severity One’ problem. They know that a broken printer means 32 to 36 pages of loan documents can't get printed. And if nobody is printing and signing loan documents, no revenues are being booked.”

Vendors aren't the only ones at fault. Users with unrealistic or overblown expectations of huge cost savings are big culprits when help desk outsourcing fails.

“Broken help desk processes and problems aren't going to be magically fixed by outsourcing,” said Meta Group analyst Kurt Johnson. “I can almost guarantee that companies outsourcing help desks purely out of cost motivations are going to end up dissatisfied.”

None of that surprises experienced help desk managers, who learned firsthand that outsourcing is a process fraught with potentially deep pitfalls. The challenges start during contract negotiations and carry all the way through to day-to-day operations, which must continually be monitored and re-evaluated.

The city of Indianapolis, for example, has been paying close to $1 million per month for data center, help desk and other IT services under a seven-year contract with SCT Corp. in Malvern, Pa. The contract started in 1995.

Yet when the city hired an outside benchmarking firm to measure productivity, it found that end users were spending twice as much time troubleshooting their own hardware and software as did end users at “best practices” firms.

“The bottom line is, you have to manage outsourcing contracts very closely,” said Chris Pichereau, deputy director and contract compliance officer in the city CIO's office.

Some of the most predictable pitfalls have to do with contracts and pricing, experts said. Less obvious are the problems resulting from users' failure to actively manage help desk outsourcers.

On the pricing side, for example, multiyear contracts may appear cheaper and may seem to provide more-than-adequate help desk coverage.

“But unless you also build in variables to those agreements, you have to live with them for 10 years,” said Albert DiBuonaventura, an IT analyst and former help desk manager at Peco Corp. in Philadelphia.

The key is to be careful what you contract for — because that's precisely what vendors will provide, nothing more. Meanwhile, your own requirements may change over the life of the contract.

For example, Peco's original 1994 contract with IBM called for the vendor to furnish updated software to detect computer viruses every quarter.

“But now viruses are more frequent, and that's not sufficient,” DiBuonaventura said. So Peco had to renegotiate an additional “document of understanding” to get the virus software once a month. Usually, but not always, there's a price tag attached to such changes, he said.

Help Desk Outsourcing Tips

- Don't sell outsourcing to upper management as a cost savings measure
- Don't outsource your first line of support
- Know your per-user/per-call support costs going into negotiations
- Insist that vendors perform due-diligence research before bidding on a contract
- Spell out agreed-upon service levels, penalties and incentives in the contract
- Insist on a contract manager and help desk staff that are dedicated to your company
- Budget 5% to 10% of the total contract price for internal management of the contract
- Continually and regularly conduct internal user satisfaction surveys
- Build annual service level reevaluations into original contract

Feedback Methods

How do you evaluate help desk performance?

88%	Automatic call distributor statistics
44%	User satisfaction surveys
30%	Trouble tickets
6%	Direct observation of help desk call-takers
4%	None

Base: Survey of IT support [illegible] a 50 Fortune 1,000 companies; [illegible] responses allowed

SOURCE: FORRESTER RESEARCH INC., CAMBRIDGE, MASS.

Bill Kern, a consultant at International Computer Negotiations Inc. in Winter Haven, Fla., said he frequently comes across contracts that contain no service-level definitions, which he says is a big mistake.

“What happens is that during negotiations, companies get swayed and get that warm, fuzzy feeling that the vendor is going to take care of them,” Kern said.

Then, after the contract is in place and end users begin to complain, “the cost of getting a service-level agreement in place can be as much as twice the price of what they're currently paying,” he said.

To avoid that kind of bait-and-switch, users should require vendors to conduct a thorough analysis of a firm's existing help desk as part of the bidding process, Kern said. “Vendors need to look at a customer's equipment and infrastructure. They have to know how many calls the current help desk takes and how those calls are handled,” he said.

If they don't, there's no way the vendor can realistically price its services.

Analysts also said contracts should contain payment penalties if service levels aren't met. But they also cautioned that vendors are likely to increase prices on contracts that contain penalty clauses.

On the management side, Meta Group advises its clients to budget as much as 10% of the overall contract price on internal resources to manage the help desk and outsourcing contract. “We also recommend that companies continually go out and talk to end users to get a sense of how the contract is working,” Johnson said. ▶

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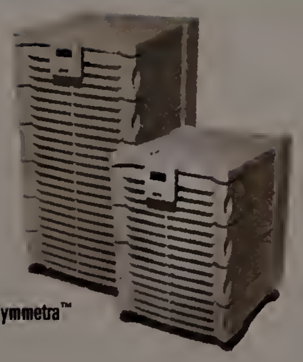

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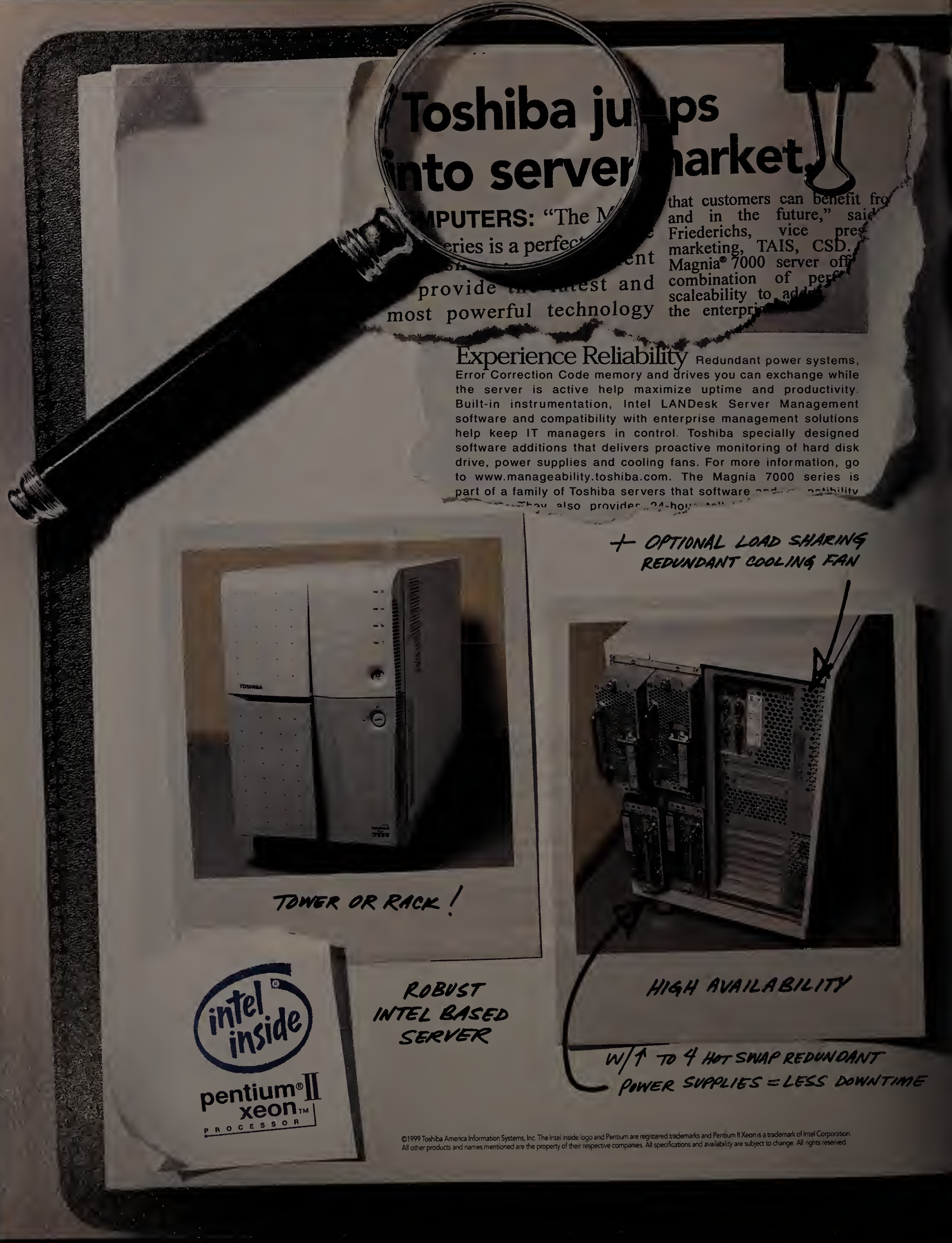

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Internet Auction Sites Need Sharp Customer Support

BY ROBERTA FUSARO

Like classified ads, auction Web sites function as one-to-one forums for the exchange of goods. But unlike classified ads, customer-to-customer auction-posting Web sites require extremely high levels of customer support, analysts and site managers said.

"It has to be top-notch," said Fiona Swerdlow, an analyst at Jupiter Communications Inc., a New York-based research firm.

Auction sites such as EBay Inc. have made noise recently with stock surges and sales of record-setting homerun baseballs. And venerable New York auction house Sotheby's Holdings Inc. last week announced plans for a Web-based business for art, antiques and other collectibles.

Unlike regular retail Web sites, auction-posting sites have to make sure bidders and sellers understand all the rules, and they sometimes need to step in to answer questions about pricing, shipping and products, Swerdlow said.

Site visitors range from avid Internet users to people who still have problems programming their VCRs — which makes customer service challenging, said Jim Baldis, vice president of operations at AuctionUniverse Inc., an auction-posting site in Yalesville, Conn.

"We sit in the middle of two different people conducting business and also sit to the side of it, because we never touch the goods," he said. "So it's tough to effectively provide the kinds of answers people need."

That might include queries about whether an item was actually shipped when promised or how the item should be paid for — typically answers only the seller can provide but that online users expect from Web site operators, Baldis said.

Good Example

Swerdlow said one of the auction-posting sites best at customer service is EBay in San Jose, Calif.

The company's customer service staff of about 90 cuts across several different areas, including site navigation, billing and customer accounts. EBay agents answer queries through E-mail and the site's three customer-service bulletin boards.

Keith Antognini, senior manager of support at EBay, said the company encourages E-mail queries. About 60% to 70% involve generic questions such as how to bid and how to sell, he said. The rest involve more complex user-to-user conflict resolution.

Ubid Inc., a site focused on electronics and some sports memorabilia in Elk Grove Village, Ill., mostly gets phone queries about how the system works and sometimes about things that happen after a sale, said marketing director Brian Williams. ◗

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COMPUTERWORLD

@HOME BUYS EXCITE FOR $6.7B

Deal combines high-speed access with Internet portal for consumers

BY MARC FERRANTI AND MARY LISBETH D'AMICO

CONSOLIDATION in the online industry continued last week as @Home Corp., a little-known company that sells high-speed Internet access to cable television subscribers, bought the Internet portal company Excite Inc. for $6.7 billion in stock.

The merger's ultimate goal is to offer interactive content to consumers no matter what device or access method they use — TV or PC, high-speed or low-speed, officials of the two companies said in a teleconference.

The companies will try to move Excite users over to @Home broadband services as well as offer advertisers a broader reach, officials said.

For example, a broadband version of Excite called Excite@Home will be pitched to users as a better way to get sports news — because users can also get video clips of highlights — and a better way to get financial news with richer displays of data.

Analysts said the deal was a reaction to America Online Inc.'s $4.2 billion purchase of Netscape Communications Corp. in November. "Make no bones about it: @Home aims to be the next AOL," Current Analysis Inc., a research firm in Sterling, Va., said in a bulletin.

One analyst expressed caution about the deal. Except for AOL, "companies generally haven't been successful combining content and delivery businesses," said Barry Parr, an analyst at Framingham, Mass.-based International Data Corp.

"The deal doesn't change the portal landscape tremendously," he said.

Excite may pick up additional visitors to its Web portal, but that wouldn't put a huge dent in Yahoo Inc.'s status as the No. 1 portal, Parr said, adding that Excite's ability to grow through @Home will be limited by the rate of growth of high-speed access infrastructure.

@Home is buying Excite at a premium of about 60% over its market capitalization. But "convergence in the Internet companies is happening fast, and @Home may have figured that while they're spending $6 billion now, they might have had to spend $12 billion a year from now," said Mark Peabody, an analyst at Aberdeen Group Inc. in Boston.

Excite will become a subsidiary of @Home, and Excite CEO George Bell will report to Tom Jermoluk, chairman and CEO of @Home, based in Mountain View, Calif. ◗

Ferranti and D'Amico write for the IDG News Service.

STEVE BORNS

@HOME'S Tom Jermoluk (left) and Excite's George Bell will offer interactive content, delivery

2 ERP Software Vendors Run Into Hard Times

Baan expects hefty Q4 loss; Manugistics plans layoffs, new CEO

BY CRAIG STEDMAN

Baan Co. and Manugistics Group Inc. — two of the problem children of the corporate applications market — each gave users and prospective buyers something more to fret about last week.

Baan warned that it expects a $250 million loss for last year's fourth quarter. The Dutch vendor of enterprise resource planning (ERP) software also said the $31.7 million third-quarter loss it reported will be increased 50% to $47.6 million because of an accounting change related to a September acquisition.

Manugistics, a Rockville, Md., developer of supply-chain planning software, announced a 30% workforce cut and a management shake-up that will reach all the way to the CEO level after a month-long effort to find a buyer for the company didn't work out.

Charges stemming from a 20% reduction in employees and other restructuring moves that were announced in the fall will account for about $160 million of Baan's expected fourth-quarter loss.

Baan also said it's reducing revenue for the quarter by $50 million to account for earlier software shipments that went to resellers but hadn't been sold to users as of September. That will leave the company with fourth-quarter revenue of $142 million, down 34% from $215.6 million a year earlier.

"Currently, it's not a real pretty sight," said Baan user Norman Thomas, director of information systems at Trojan Technologies Inc. in London, Ontario. "But I haven't seen any detrimental scenarios here because of the financial situation. And I'm definitely still a long-term bull on Baan."

Rollout Postponed

Trojan, which makes ultraviolet water treatment systems, had hoped last week to be the first user to go live with a new Baan ERP upgrade. The rollout was postponed until next month because of lingering bugs and delays in data migration work that was being done by Baan, but Thomas said those appear to be normal software development glitches.

Baan doesn't appear to be in danger of a financial meltdown and is starting to look like "a much more conventional company" thanks to management changes made last year, said Jim Shepherd, an analyst at AMR Research Inc. in Boston

But Baan still needs to spell out how it plans to tie together its flagship back-office applications and other products it has bought, Shepherd said. ◗

Other Fourth-Quarter Earnings

COMPANY	Q4 REVENUE*		Q4 NET INCOME* (LOSS)	
*REFERS TO CALENDAR FOURTH QUARTER	1997	1998	1997	1998
Citrix Systems Inc.	$43M	$75.5M	$12.5M	$24.2M
Computer Assoc. Int. Inc.	$1.2B	$1.4B	$340M	$354M
Corel Corp.	$43.6M	$67.2M	($66.9M)	$6.8M
IBM	$23.7B	$25.1B	$2.1B	$2.3B
Microsoft Corp.	$3.6B	$4.9B	$1.13B	$1.98B
NCR Corp.	$2B	$2.1B	$36M	$49M
Sun Microsystems Inc.	$2.5B	$2.8B	$149M	$261M
Sybase Inc.	$223M	$233M	($25.5M)	($14.6M)

BRIEFS

Supreme Court Won't Hear Bells

The U.S. Supreme Court refused to hear arguments from SBC Communications Inc. and Bell Atlantic Corp. who say they consider the Telecommunications Act of 1996 to be unconstitutional. The regional Bell operating companies sought to overturn a lower court ruling that upheld a ban on offering long-distance services until there is local-exchange competition. The companies said the law is unconstitutional because it unfairly singles out the Bell operating companies for punishment.

FTC vs. Intel Case Stalls for Two Weeks

The antitrust trial of Intel Corp. was delayed two weeks after both Intel and the Federal Trade Commission (FTC) – which is suing the vendor – asked for more time to prepare. Intel has failed to provide documents requested by the FTC. The commission, in turn, has delayed pretrial depositions. The judge in the case moved the trial's start from Feb. 23 to March 9.

Vodafone Wins AirTouch Deal

With a $58 billion bid, London-based Vodafone Group PLC won the international bidding war for AirTouch Communications Inc. of San Francisco. The deal was announced shortly after Bell Atlantic Corp. dropped out of the bidding Jan. 15. The new company, to be called Vodafone AirTouch PLC, will be the largest mobile-phone company in the world.

IT Lobby Groups Combine in D.C.

Two relatively new Washington-based lobbying groups, both backed by Microsoft Corp., announced a merger last week. The Technology Access Action Coalition, led by Vanstar Corp., CompUSA Inc. and Microsoft, merged with the Association for Competitive Technology (ACT), creating an organization with more than 500 members.

PAUL GILLIN

The future is Furbys

OF ALL THE big industry happenings of recent weeks, the one that has stuck in my mind the most comes from Maryland. That's where the National Security Agency has banned from its offices Furbys, those annoying little owl-like dolls with the embedded sound-recording chips. The NSA, which has successfully defied the collective might of the computer industry in its stance against encryption exports, is now taking on the toy industry. It contends that the digital voice recorder embedded in Furbys compromises national security by making it possible for sensitive information to be inadvertently recorded and removed from NSA facilities.

PAUL GILLIN is editor in chief of *Computerworld*. Contact him at paul_gillin@computerworld.com

I think the ban is a great development, and I'd like to see the NSA carry it further. It can start by extending its ban to include Real Talkin' Bubba, a particularly irritating toy bear with a voice like Ross Perot and an embedded chip that continually plays more than 100 phrases, all of them moronic. I have watched my kids' IQs sink 25 points since they acquired this thing.

On the other hand, the NSA could learn to use digitally enabled toys to its advantage. Why not equip several thousand Furbys with miniature transmitters and drop them by the planeload over Iraqi military installations? The Iraqis would think we were finally being nice to them, and we could use Furby-derived intelligence to find those chemical weapons plants in a heartbeat.

Then the computer industry could build on that opportunity. There would soon be a Furby aftermarket with devices for downloading Furby files to a PC, attaching them to E-mail and sending them over the Internet. Microsoft would announce Fur-Windows but wouldn't specify a delivery date. There would be a PalmFurby. You could have real-time Furby-based transceivers that send digitized sound over a wireless frequency. Do you suppose Hillary Clinton would have liked to have one of those in Bill's private office? You bet!

The industry may seize on the Furby ban as another indication that the NSA is a bunch of clueless dimwits. But I think it's been presented with a huge business opportunity. Go for it, dudes! ◗

BILL LABERIS

IT age-bias claims ignore workers' priority choices

IF I HEAR one more lament about fortysomething programmers being discriminated against just because they're "old," I'll get sick. When the 41% of IT managers who believe there is discrimination [CW, Dec. 14] stop to examine the facts, most age-discrimination claims will be relegated to the trash can.

The age-discrimination problem — which primarily is a white-guy thing, because about 85% of the 40-and-older IT workers are white guys — goes like this: You have to pay more for experienced workers than inexperienced workers, so the oldies cost more.

BILL LABERIS is a consultant in Holliston, Mass., and former editor in chief of *Computerworld*. Contact him at bill@laberis.com.

Not only that, they're less flexible than younger workers and often aren't endowed with the latest and hottest skills. They also tend to have families with whom they like to spend time, and they're involved with civic activities, churches and other organizations whose evening meetings take the place of late-night IT work.

Weekends are for the kids' soccer games, basketball, ballet and maybe even some personal enjoyment.

The younger, ostensibly more desirable workers are cheaper to pay, have current skills and are more flexible. (Translation: You can work them almost to death as long as there's a soda machine close by.) They aren't particularly loyal.

What's wrong with this picture? Surprisingly, very little.

If a hiring manager wants to choose younger, cheaper and disloyal over experienced, disciplined and in-need-of-training, that's his choice to live with.

Similarly, if the fortysomething chooses family, church and civics over late nights and nonstop training, then God bless him.

Those are excellent choices, but choices nonetheless, similar to that of the woman who leaves the workforce to have children.

But when you make those choices, you must do so with the concept of opportunity cost in the front of your brain. That's the cost of not doing X while you're doing Y.

It's the cost of not getting advanced training because you're coaching baseball.

I'm not so naive as to believe there is no age discrimination out there. Of course there is — but it's not as rampant as the hooters and hollerers believe.

Real age discrimination in IT, the illegal kind in which someone is passed over *solely* because of their age, is not the rule — not by a long shot. The unemployment rate for workers 55 to 64 years old isn't even 5%, according to the U.S. Labor Department.

IT remains an industry starved for good people. But "good" doesn't mean someone with 20 years of Cobol experience and not much else. The Information Technology Association of America reports that the nation is awash in year 2000 Cobol programmers.

If you don't want to refresh your skills, don't gripe.

P.S.: I am 47 years old. ◗

DAVID MOSCHELLA

Traditional firms need to go on a Net offensive

WAY BACK IN 1995, when Netscape emerged as a clear threat to Microsoft's future, Bill Gates turned his company on a dime and became a major Internet player. Why is it that when Barnes & Noble, Fidelity Investments, Tower Records, Toys R Us and others face similar challenges from Internet-based rivals, their response has been so much more muted?

After all, it's 1999.

DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at **dmoschella@earthlink.net**.

Microsoft has already provided them with the correct response formula. Established market leaders must match the technical features of their pure Web rivals, use their financial muscle to indisputably beat them on price and then launch the required marketing offensive.

Consider what would happen to ETrade Group if one of the big brokerages decided to offer commission-free online trading forever. Microsoft showed Netscape the answer.

The sluggishness of traditional players is usually attributed to blindness, lack of will and urgency, and bureaucratic infighting. All of those are important, but the most vital factor is often ignored. It's money.

The biggest challenge for any established player is to face up to the implications for corporate earnings. The reality is that as long as Internet companies are growing fast and gaining market share, their stock value will rise almost regardless of how much money they lose.

In contrast, when an established company invests in its Web site, corporate earnings take a hit, and the stock price sags.

People often look at those two different financial pictures and say that the Internet valuations must be groundless, even crazy.

However, they seem to forget that profits are almost always a trailing indicator. They grow out of the inertia of the existing business, not the current competitive state.

The earnings of a Fidelity or Barnes & Noble can easily overstate the true health of their businesses, just as the losses of an Amazon.com can understate its condition. Remember that during the mid-1980s, Digital Equipment was very profitable, even while its underlying value proposition was in shambles.

As long as the health of an Internet company is viewed in terms of its growth, and an established company in terms of its earnings, the latter will be at a competitive disadvantage.

Like Microsoft, the pre-Internet companies must change the rules of the game by moving from a defensive to an offensive position. Unlike Microsoft, those established companies don't have monopoly power and therefore won't have to worry about antitrust considerations.

Of course, in Microsoft's case, the financial cost of asserting control over browsers was trivial compared with the benefits.

In many other industries, the price will be much higher. Therefore, the questions for many of today's established players is: Do they have sufficient tolerance for the required pain, and are their leaders capable of abandoning a business philosophy that is first and foremost about near-term earnings?

The Web provides a great example of how short-term financial results and long-term business strategy can be almost totally at odds. Yet have you ever heard a CEO actually say this to justify the necessity of a huge Internet buildup? You can usually assume that if they aren't saying it externally, they aren't doing it internally.

That's odd because any established company that really becomes an Internet leader will be rewarded with an Internet-style stock price.

Unfortunately, as the years go by, there inevitably comes a time when it becomes too late to regain the offensive.

We're not there yet, but we're getting close. 1999 should be a year to be bold. ◗

READERS' LETTERS

Leadership: It all comes down to trust

I FIND IT a bit surprising that anyone was "shocked" by the reaction of 3M managers and staff to the call for leadership ["3M's Leadership Journey," CW, Dec. 14]. Having lived through a number of management initiatives, I would react in a similar manner.

Trust is the basic building block in any kind of change that involves people. Without trust, all attempts to change the culture will fail. Trust is slowly earned and easily broken. And once it is broken, it is occasionally repaired, but usually at great expense.

John Russo
Bridgeport, Conn.

Y2K bug may bite you

A READER'S comment from Mark Yannone ["Letters," CW, Dec. 7] said that Y2K workers should unionize and make demands such as freedom from paying income taxes.

That's a totally selfish thing to say.

Mark, if you really are an IT professional, when the common folk really grasp the impact and implications of the Y2K bug, I wouldn't be bragging about how much money you make (fixing code that we all knew would fail) at this year's and next year's holiday parties. You may get lynched!

Mike Grimaldi
New Fairfield, Conn.

This tech 'cowboy' earned his spurs

WHEN I worked at one of the top software houses in the country, I was written up for being too much of a "cowboy."

In support of my position, shortly thereafter I was asked to start writing specs. I asked for a template to follow, and no one was able to provide one. So I wrote my own, which eventually (with modifications) went on to be a standard for the company. Who was the cowboy?

Business is about meeting customer needs. A buggy program that meets those needs is better than bug-free software that hasn't shipped yet. The programmers who wrote code that would fail in Y2K are no different than the CEOs who chase this year's profits at the expense of profits a few years down the road.

Dave Berg
Chief Technology Officer
Total Control Information
Tucson, Ariz.
DBerg@TCI-MGT.com

Shining a Y2K light

I HAVE BEEN a regular reader of *Computerworld* for 20 years and offer you my congratulations because the paper has never looked better. Your stable of columnists, from the acerbic Frank Hayes to wise old owls like Peter Keen and Paul Strassmann, displays a breadth and depth that no other computer publication comes near.

Your adherence to the paper's 10 ethical principles is appreciated. And your early and accurate reporting of the Y2K crisis was outstanding. A few years ago, *CW* stood almost alone in highlighting the urgency of this issue. Now, as we move into the final months of scrambling and panic, I trust *CW* will continue to be a weekly beacon of common sense and accurate Y2K information.

Henry Ahlgrim
Tokyo

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for immediate verification.

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DON TAPSCOTT

It's time to create a conversational democracy

WATCHING the colossal amount of time, energy and money being wasted by the Clinton impeachment trial in the Senate almost makes one think the Ross Perot proposal for electronic town halls actually makes sense.

Polls show that the vast majority of voters think President Clinton is doing a good job and has been sufficiently humiliated by the Monica Lewinsky affair. The public wants Republicans to stop the nonsense and move on.

DON TAPSCOTT is chairman of the Alliance for Converging Technologies, a Toronto think tank investigating how the Internet changes business strategy.

Perot's solution would be easy: Americans could simply surf over to the congressional Web sites, mouse-click the Republicans back to reality, and the Clinton administration could return to governing.

But as appealing as it may sound in this instance, government-by-electronic-town-hall is not a good idea. We don't want to convert elected officials into mere marionettes, with strings courtesy of the Internet. The result could be government by electronic mob, with important principles, such as minority rights, being trampled in the process.

Motions put to a vote in legislative assemblies (the impeachment aside) are usually well-refined distillations of large and complex issues. They result from a long process involving conflicts, contradictions and compromises. To understand a motion and to vote responsibly, citizens need to participate in some form of thought-refining process.

But the impeachment controversy is showing that many citizens want a role more active than that of sideline observer. Congressional computer networks are collapsing under the weight of hundreds of thousands of E-mails from voters daily. But in an outrageous turn of events, some politicians dismiss the electronic messages as unimportant, saying that sending E-mail is "too easy."

The situation is so bad that the nonpartisan *www.senatevote.com* has been established. The group promises to take E-mail messages from voters, print them and hand-deliver the messages to the senators' offices. That way, voters can be assured their messages are received. And being printed on paper will apparently give the messages more weight with some senators.

It's absurd that E-mail messages have to be printed before politicians take them seriously. The electorate has a right to be more involved in the political process, and rather than giving it the cold shoulder, elected officials should seize the Internet as offering a real opportunity to substantively involve the electorate.

The Net is an unprecedented tool for stimulating a true dialogue between the public and their representatives and incorporating voter insight and wisdom into legislative decisions. We could achieve what some have described as a "conversational democracy" — elected officials still make the final decisions, but average citizens are much more involved in the policy development process. Citizens could share their insight and wisdom, for example, through publicly sponsored forums and brainstorming sessions.

It's ironic that when some members of Congress wanted maximum publicity for the Starr report, they understood the power of the Internet very well. No other communications medium could put every salacious detail into the public realm so quickly. But another attractive feature of the Net is that it's interactive, not just a one-way street. It's time Congress understood the importance of this feature as well. ◗

MICHAEL SCHRAGE

Why aren't we serious about year 2000 recovery?

I WAS LYING AROUND the pool reading *Computerworld* ('cause that's the kinda guy I am), and the lady next to me asks me about whether she should worry about the year 2000 problem. After my attempt to feign deafness failed, I had a minor epiphany: I realized what has so annoyed me about so much of the year 2000 speculation.

MICHAEL SCHRAGE is a research associate at the MIT Media Lab and author of *No More Teams!* Contact him at schrage@media.mit.edu.

Like everyone else, I haven't a clue what systems — if any — will stall, wobble or crash come the millennium. I wouldn't be shocked if there were a couple of dramatic systems failures in the U.S. — and more than a couple of digital disasters in Europe and Asia — and I wouldn't be surprised if 1/1/00 yielded but the most minor of glitches.

But what does surprise me is that I hear way too much discussion about millennium bug detection and removal and not nearly enough about what I feel to be the single most important year 2000 issue: contingency planning and recovery. Yes, it would be nice if systems didn't crash. But it would be an even better thing that, when they do crash, organizations had practical work-arounds and meaningful contingencies prepared to compensate for the inevitable.

So when I read in *The Wall Street Journal* that Major Bank has spent $250 million on year 2000, and Humongous Global Manufacturer tells the Securities and Exchange Commission that it plans to spend $100 million, I get more irritated than impressed. Though I fervently believe that ounces of prevention are worth pounds of cure, I also think we are all pragmatic enough to appreciate that mean time to recovery matters far more than mean time to failure when it comes testing. Let's face it: We *know* systems are going to crash.

In the American health care system, we spend disproportionately more on treatments and healing than on prevention; in the computer industry, we invest disproportionately in defect preventions than on backup and recovery. Those year 2000 spending numbers never break down what's invested in preventing glitches and what's spent on rehearsing recovery.

That is IT's pathology: We don't design and implement our upgrades and enhancements with the expectation that perverse consequences are every bit as likely as the more predictable ones. The result is that we inherently misallocate both resources and expectations when things break down in ways we didn't anticipate. Designing to prevent breakdowns isn't the same as designing for maintenance and recovery.

If a year 2000 glitch caused every ATM network in the U.S. Northeast to crash, that would certainly be big news — but if that massive network crash lasts for all of 90 minutes, it's more of a nuisance than a catastrophe. If a millennium bug knocks out a couple of power substations, and it takes the utility two weeks to figure out a fix or a bypass, then you've got real problems. A hundred thousand people or so in Virginia had their own unhappy little year 2000 dress rehearsal this winter thanks to a series of ice storms and a public utility whose recovery plan turned out to be considerably under the weather. They survived.

Question: Does it make sense for a year 2000 czar in charge of preventing millennium glitches to be the same person to manage contingency recovery? To put it another way, do you put the most knowledgeable public health people in charge of the hospital emergency room? I think not. Yet that is, in fact, precisely what most large organizations seem to have done. I think CEOs and their operating committees should be crafting worst-case year 2000 scenarios and challenging their IT departments on their recovery plans every bit as aggressively as they are challenging their year 2000 defect-detection, removal and testing timetables.

It's time to stop speculating about all the wild and crazy things that can go wrong with this millennium bug business and time to start arguing about what to do when the networks that aren't supposed to fail actually do. ◗

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BUSINESS

ERP HOPEFULS

Traditional return on investment calculations don't take into account secondary effects of enterprise resource planning installations. But users said specific ROI goals are useful to keep projects on track, while rejiggering business processes. ▸ **40**

PORTAL OPENING

When Disney bought Infoseek, it decided to build the Go portal site with content from ABC.com, ESPN.com and others. The Go team had six months to get to know one another and their technology before going live in a very public way. ▸ **49**

OK ON Y2K? DA

Russian missiles won't launch themselves at the U.S. Jan. 1, 2000 . . . probably, according to Russia's leading year 2000 analyst. He predicted, in one of his first interviews with the Western press, that Russia's infrastructure faces many challenges. ▸ **52**

MIDDLEMEN REMAIN

E-commerce has reduced the role of some middlemen, but don't bet disintermediation will fix everything, Jim Champy writes. Manufacturers aren't close enough to customers to know what consumers want. ▸ **54**

WHY'D YOU QUIT?

Exit interviews are painful, but they can uncover problems managers can't see. That keeps turnover low in a tight labor market. ▸ **58**

STRUGGLING TO HIRE

Small IT shops have a hard time competing for talent but offer some advantages. They provide wider experience, looser lifestyles and more personal recognition. But the stress is the same, and the job descriptions can be rigid. ▸ **55**

SELF-HELP

Up-to-date training is key for consultants trying to remain marketable, but how to train without losing billable time? Our consultant sources use books, short courses and pick only the training that promises a good payback. ▸ **53**

BUZZWORDS

Have you ever been "backgruined" while checking to see if a résumé has been "acro'ed" up? Should you want to get "painted," "enchiladaed" or "framed"? Michael Cohn explains the newest career-switching jargon. ▸ **64**

CAREER ADVICE

Career Adviser tackles questions on entry-level jobs, the lifetime of Cobol vs. Java, and how to structure your rates as a first-time contractor. ▸ **65**

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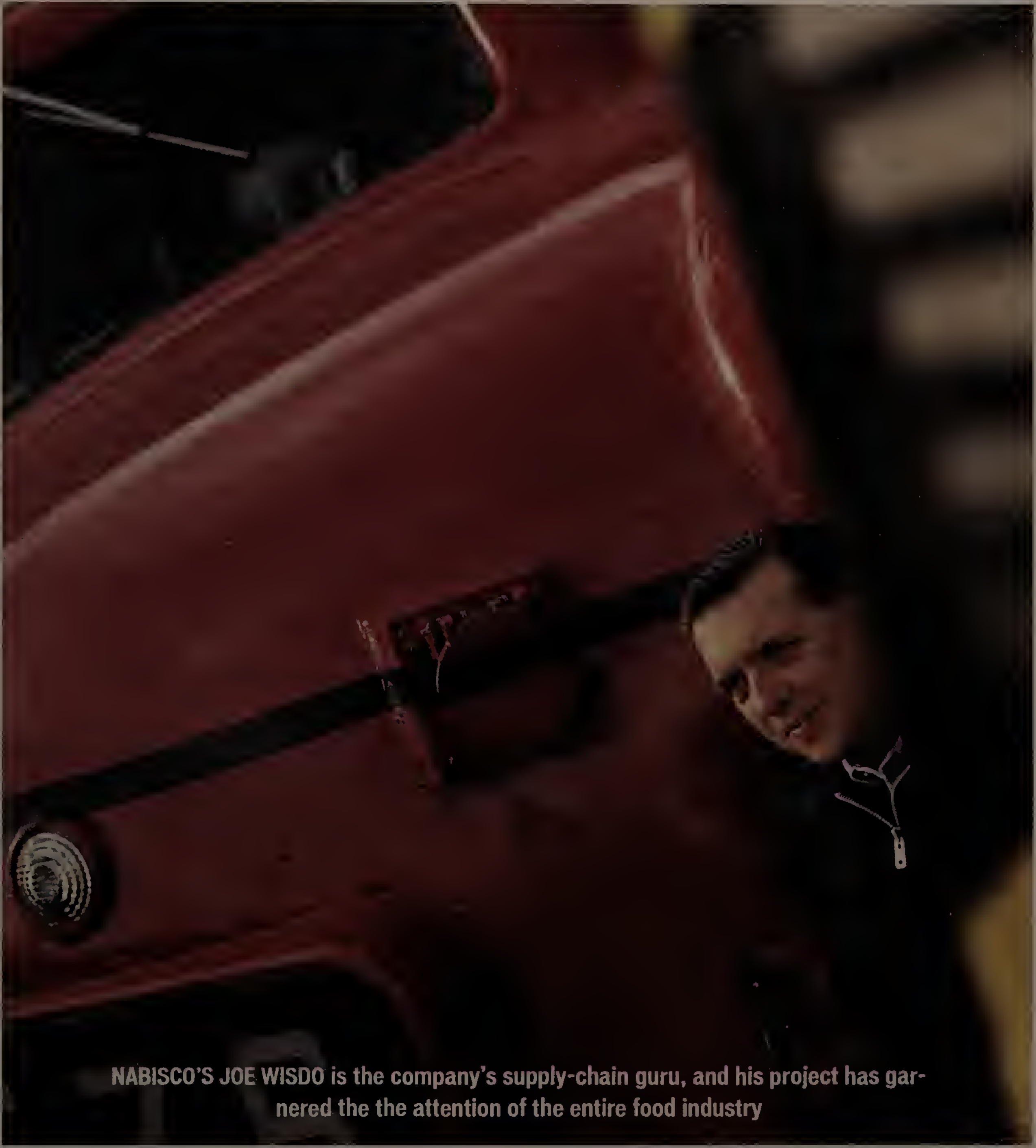

PETER SIRLING

NABISCO'S JOE WISDO is the company's supply-chain guru, and his project has garnered the the attention of the entire food industry

SUPPLY-CHAIN INNOVATORS

NABISCO'S JOE WISDO helped lead a cutting-edge supply-chain project to improve inventory management and drive sales. Reebok's Peter Burrows leaned on SAP until it built a special version of R/3 for the apparel industry. Both said successful supply-chain projects can give incredible returns, but getting them going means making up the rules as you go along.

59

ROI FIGURES CAN EASE INSTALLATION PAIN

Even when not required, they help by setting tangible objectives

BY CRAIG STEDMAN

TRADITIONAL calculations of return on investment often tell only part of the ERP story. But they're a fact of life for many companies trying to justify such an expensive project.

Yet even when enterprise resource planning (ERP) systems are installed for reasons other than cost savings — because of year 2000 issues or because older systems are running on empty, for instance — having a return-on-investment (ROI) target can help companies survive the stress of an ERP installation, users and analysts said.

ERP STRATEGIES

For example, Florists' Transworld Delivery Inc. (FTD), a flower distributor in Downers Grove, Ill., is installing ERP applications developed by J. D. Edwards & Co. because doing so was faster than trying to do a year 2000 fix on its homegrown applications.

But FTD still went through the process of calculating an anticipated financial return in order "to keep spirits up," said Linda George, vice president of information systems.

"We felt doing an ROI would help if someone along the way forgot that we wouldn't be in business [next year] without this," she added.

To make the ROI numbers more believable, business users were asked to help define potential benefits, George said.

The end result: FTD expects its $8 million-plus project to pay for itself within 24 months through inventory savings, better customer service and other improvements.

Having specific ROI goals in areas such as inventory costs can give harried users something to focus on while they grapple with all the business changes that typically accompany ERP software, agreed Jeanne Ross, a research scientist at MIT. "Otherwise, everything tends to get lost in the chaos — and that can make [a project] look like a total disaster," she added.

Just a Piece

Ross noted that ROI projections can be useful even though they often "only capture a piece of the overall return" that ERP systems can deliver.

She agreed with other analysts and ERP users that it's hard to put a dollar figure on key strategic benefits such as tighter integration between business units [CW, Jan. 18].

That has certainly been true for clothing manufacturer VF Corp. in Greensboro, N.C., where the big benefit from installing SAP AG's R/3 and supporting applications is expected to be increased flexibility for buying other companies and reacting to changing business needs.

"This is really putting us in a position to move forward," said Leroy Allen, vice president of re-engineering at VF. "We all think that's bigger than the [expected] hard-dollar returns, but you can't put a number on it until you see it."

And VF did a traditional ROI calculation to help justify the ERP project, which is one of the largest investments it ever will make short of a company acquisition.

"The ROI looks good," said Allen, who said he is counting on a two-year payback. ◗

Top Benefits Of SAP R/3

ECONOMIC BENEFITS	
Better financial management	55%
Personnel reductions	50%
Reduced IT costs	41%
STRATEGIC BENEFITS	
Integrated business processes	58%
Better flow of information	52%
More responsive to customers	47%

Base: Survey of 110 executives at companies using SAP's R/3 applications; multiple responses allowed

SOURCE: BENCHMARKING PARTNERS INC., CAMBRIDGE, MASS.

SNAPSHOT

You're Fired! Evolving CIO Shortcomings

1990	1998
An empire builder . . . wants to keep technology as exclusive province.	Doesn't fit in with the management team. Not the right chemistry.
Inflexible . . . continually fights over turf, reporting lines, budgets, etc.	Lack of passion for the technology and the business of technology.
Won't streamline . . . reduce staff or requirements.	Lacks vision. Doesn't have what it takes to lead us into the 21st century.
Out of touch with the business goals.	A poor listener, unable to pick the real priorities.
Never sets attainable near-term goals.	Can manage, but doesn't lead.

SOURCE: 1990 AND 1998 SURVEYS OF 85 COMPANIES BY JOHN J. DAVIS & ASSOCIATES INC., A NEW YORK EXECUTIVE RECRUITMENT FIRM

Knowledge Managers Need Business Savvy

Technology background important, but knowing which information matters is key

BY BARB COLE-GOMOLSKI

Companies often look for information technology professionals who have business experience as well as technical expertise. But in the relatively new discipline of knowledge management, business know-how comes first.

Knowledge management experts develop plans for sharing corporate information that can include everything from competitive analysis to consulting experience. And although companies initially thought appointing a chief knowledge officer was the best way to launch a knowledge management program, many observers view such projects as team efforts driven by the business units [CW, Jan. 4].

For knowledge management experts, understanding technology is key. But even those promoted through the IT ranks tend to have extensive business backgrounds, observers said, because they need to be able to determine what information is worth sharing.

"Knowledge is not an abstract thing, which is how IT tends to see it," said Thomas Brailsford, research manager for knowledge leadership at Hallmark Cards Inc. in Kansas City, Mo. Brailsford was plucked from the company's business research group, which does market and competitive analysis. He said a strong business focus is essential because "knowledge is created in the business units."

Help Wanted:

A typical job description of a knowledge management expert might look like this:

"Firm seeks **highly-motivated** individual with at least **10 years** IT and/or business experience and an **entrepreneurial spirit** for role of knowledge leader. Must be able to **motivate end users** to use knowledge-sharing applications without coming off as pushy. Deep understanding of **business strategy** a must; **IT expertise** a plus."

One recent study of 24 companies by The Delphi Group, a research firm in Boston, found that knowledge managers tended to have at least 10 years of IT or business experience, an entrepreneurial spirit and a keen sense of the business.

When you look at the people in this area, you see a group that has an "almost instinctive sense for the business," said Tom Koulopoulos, president of Delphi. "That understanding often comes from extensive firsthand experience," he said.

For instance, AT&T Corp. in Bedminster, N.J., tapped Jan Scites, vice president for Internet implementation strategy, as one of its key knowledge leaders. Scites had been heavily involved in the firm's re-engineering. She said her business background helped her set some basic objectives for the knowledge management initiative, such as cutting training for customer service representatives from three-to-six months down to about 20 days.

Susan Barrow is vice president of knowledge management at Monsanto Co. in St. Louis. But before earning her MBA and moving into her current position six months ago, Barrow was a physician.

Her 10-year internal medicine practice and work as a drug researcher has given her a solid understanding of research and development and product marketing. "You have to have a strategic outlook on the business, and understand what is important for business value," Barrow said. Her medical training has also helped her to understand "psychological and sociological implications" of knowledge sharing.

A knowledge leader has to be conciliatory, she said. ◗

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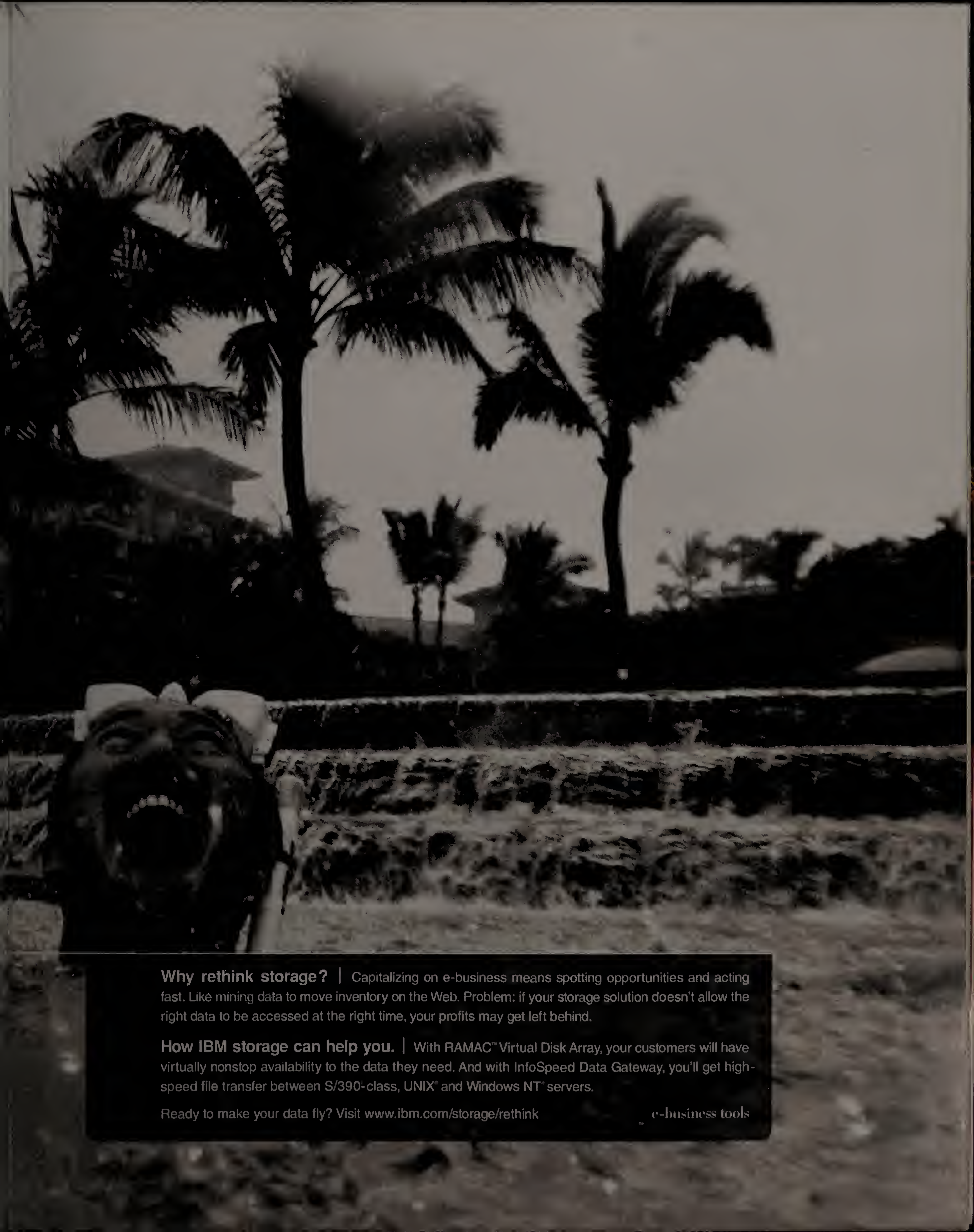

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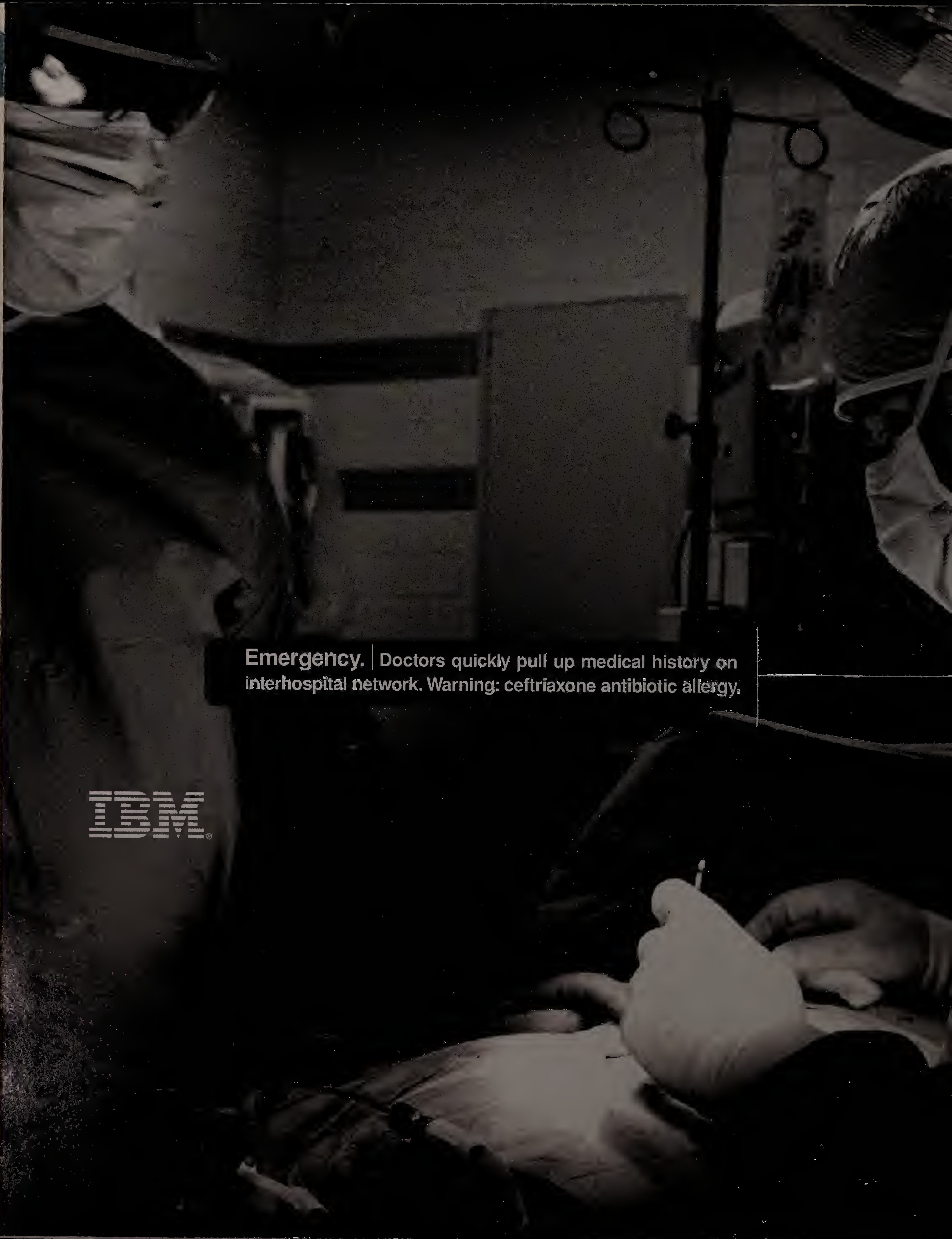
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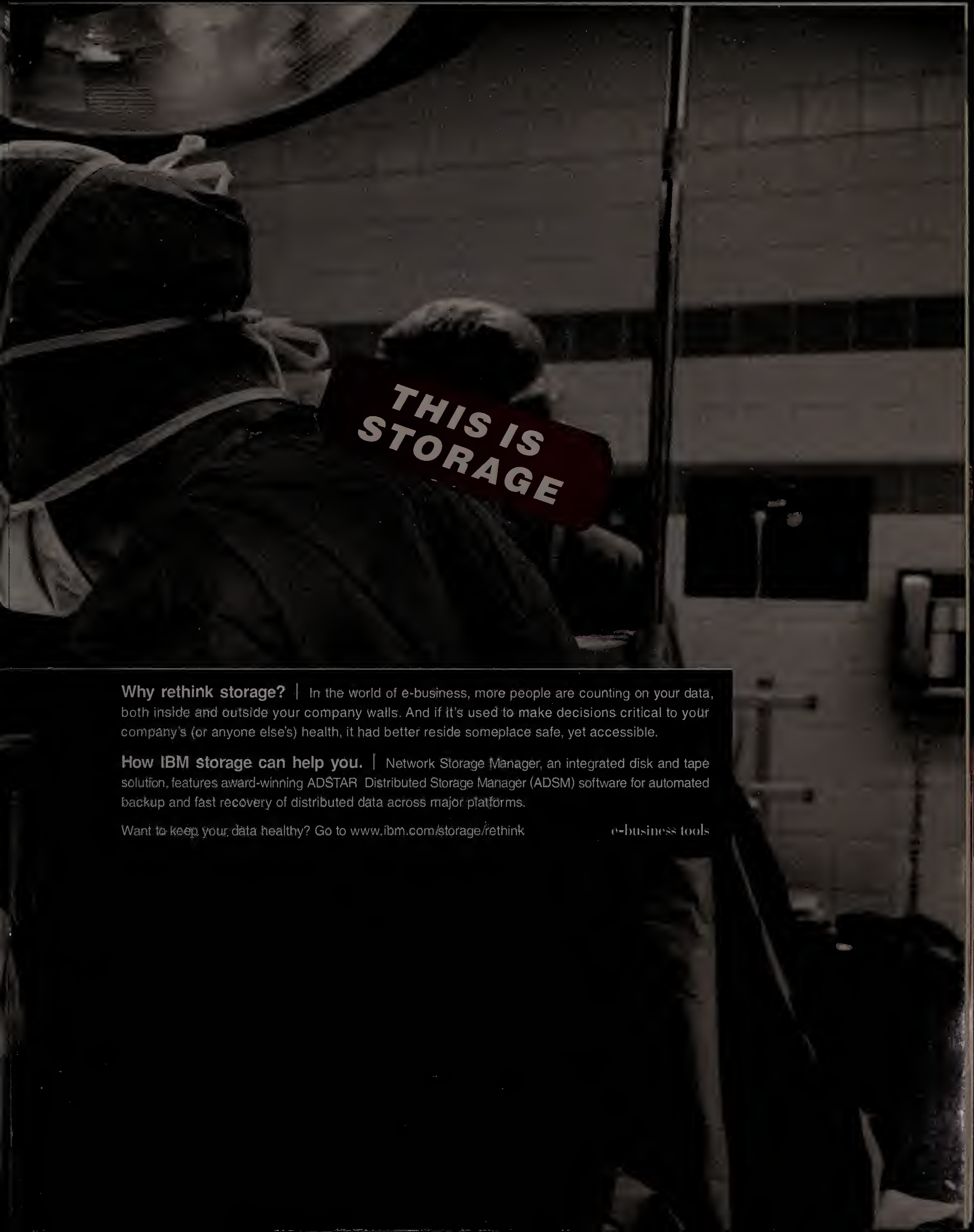

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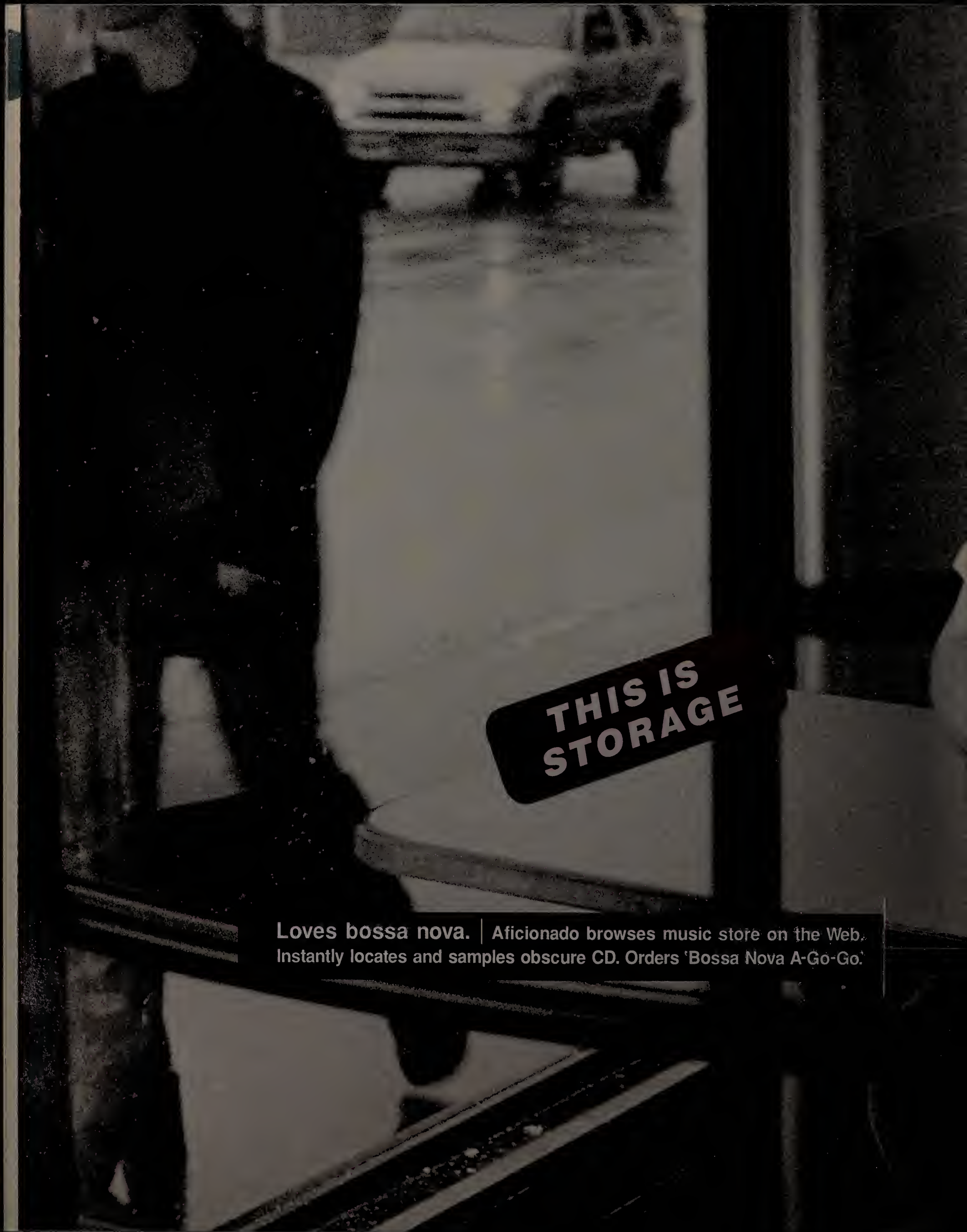
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BRIEFS

Online Banking

Internet bank Security First Network Bank (*www.sfnb.com*) last week announced it will use consumer-authentication technology from Equifax Secure Inc. in Atlanta to help verify that applicants for online accounts are who they say they are. The service will do this by asking customers for information from existing accounts at the Atlanta-based bank or from Equifax's databases of financial information. Questions might include where someone holds a mortgage or a credit-card account.

NASD Disclosures

NASD Regulation Inc., a securities industry self-regulatory organization, said it's delaying plans to post disciplinary information about brokers on the Web. The postponement resulted from questions about whether NASD's legal immunity covers data posted on the Web; current legislation specifically grants the Washington-based organization protection from lawsuits when giving out information over its toll-free telephone line.

NASD is seeking legislation specifically extending that immunity to other communications media, including the Web.

World Wide Wait

The average time, in seconds, to download a home page from one of 40 business-related Web sites during business hours for the week of Jan. 11, 1999:

Top 5 Best-Performing Web Sites	
AltaVista	**3.27**
UUnet	**4.64**
Oracle	**4.88**
Novell	**5.21**
Charles Schwab	**5.28**
Best Areas to Web Surf	
Pittsburgh	**5.22**
Kansas City, Mo.	**5.30**
Detroit	**6.12**
Worst Areas to Web Surf	
Columbus, Ohio	**22.10**
Norfolk, Va.	**18.31**
Philadelphia	**16.05**

BUILDING A PORTAL DURING A MERGER

Disney/Infoseek team had to mesh technology and work styles on fast track

BY SHARON MACHLIS

When the Walt Disney Co. shelled out nearly a half-billion dollars for Infoseek Corp. last year, it made a major bet that it could play in the hotly competitive portal market. Execution of that wager was left in the hands of a 100-plus-member team that needed to pull the Go Network project together.

"It's definitely a challenge doing a huge project development effort in the middle of a merger," said Sue LaChance, project manager at Infoseek in Sunnyvale, Calif.

Different Styles

There were different organizational styles to mesh, such as who made a final call on a decision: the project or engineering manager. And some differences weren't obvious at first — formatting, for example.

The completed site contains links and content from ABCNews.com, ESPN.com, Disney.com and affiliated sites. Those sites use different methods to post information — content-management software to update pages vs. systems that generate pages dynamically, for example — which leads to two different assumptions about what data constitutes a "search result," for example. If Go team members didn't account for differing assumptions about what constitutes a search result, queries would fail, she said. "Both assumptions were absolutely reasonable," added John Nauman, vice president of engineering at Infoseek. "We had different perspectives."

Working together while being geographically separated also was difficult. "You couldn't just walk down the hall and talk," Nauman said, though "from about midway through, things got a lot better" as the different groups learned more about one another.

Starwave Corp., a Web development venture backed by Disney that helps publish ABCNews.com and ESPN.com, was involved with work on both content and creating global registration, so that a user of one site is registered at all of them, along with teams at individual sites.

ONE CHALLENGE for webmasters is to present varying styles of news and information in an appealing and cohesive fashion

LaChance said the Go Network, which was finished on deadline, dealt with these issues through "very close project management," including frequent meetings on the project and engineering sides. What has she learned from Go? "[To] have more face-to-face meetings" and to help team members understand one another's technical assumptions more quickly, LaChance said.

The new site has 8 million regular users — a 36% reach in the universe of Internet users, the company said.

Although many major portal sites have similar offerings, Go's combination of multiple, popular sites is at least slightly different from the pack, said Patrick Keane, an analyst at Jupiter Communications Inc. in New York. ◗

Hotels Drum Up Business Using E-mail

One gets burned, most avoid spam label

BY ROBERTA FUSARO

The Gold Canyon Golf Resort in Gold Canyon, Ariz., got burned earlier this month when it tried to rent rooms with the help of E-mail. But other hotels have been using the tactic successfully, analysts said.

Gold Canyon was "bombed" with thousands of angry E-mails as a result of a spam campaign it had originally intended only for travel agents, said resort director Merle Makings. After a dispute, the spammer it unintentionally hired broadcast Gold Canyon E-mail addresses to thousands of angry Netizens [CW, Jan. 18].

But Radisson Hotels Worldwide last summer launched its "My E-Scapes" E-mail service, which sends registered users information about customized vacation packages via E-mail. About 20,000 users have registered for the service through the Radisson Web site, said Rachael Marret, director of interactive marketing at Radisson in Minneapolis. Being accused of spamming is a concern, but "since the customer is registering, they are giving us authorization to send information," Marret said. "We only send the messages that are relevant to them. They aren't just getting mail because they signed up at a Radisson Hotel somewhere."

The Westin Resort at Hilton Head in South Carolina mailed out business-reply cards last year asking for customers' E-mail addresses. Customers who returned an address with the card will receive promotional mailings this year, said Todd Aaronson, a Westin marketing manager.

The speed and low cost of E-mail make it "the way to go for smaller hotels," said Joel Gilgoff, owner of the Southwest Inn Hotels in Sedona, Ariz., and Eagle Mountain in Scottsdale, Ariz. Gilgoff said about 60% of Southwest's reservations are made over the Web. He hasn't received any complaints in response to promotional E-mail and said he uses several online mailing programs, including WebSite Garage, to collect and store customer information.

The hotel and travel industries still are relatively new to the Web, but are doing some of the most sophisticated work online, including virtual room tours, and maps and local information sent to customers via E-mail before they arrive, said Debra Franklin Cannon, assistant professor of hospitality management at Georgia State University in Atlanta.

E-mail marketing has the potential to provide a lot of value-added information, but campaigns are effective only if they're directed at a specific audience; untargeted mail or promotions using out-of-date lists are "a shot in the dark," Franklin Cannon said.

Besides targeting direct-mail lists with their information, smaller hotel chains also can maximize their exposure by linking up with online travel sites, including Expedia, Travelocity or WorldRes, said Larry Chervenak, president of Chervenak, Keane and Co., an industry consulting firm in New York. ◗

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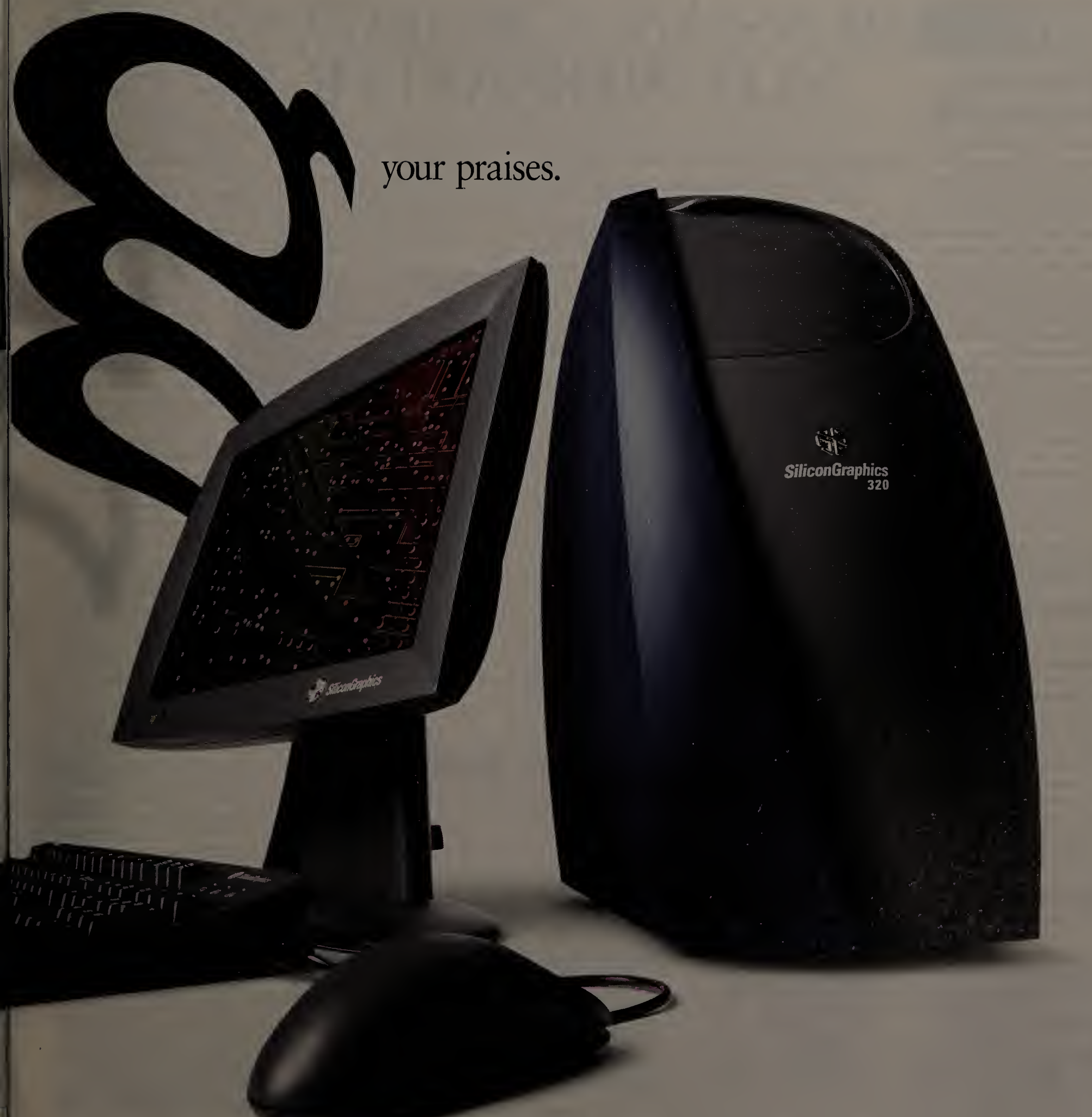

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BRIEFS

ADP Helps Clients 'Keep America Paid'

Automatic Data Processing Inc. in Roseland, N.J., has launched "Keep America Paid," a program to help its thousands of financial services clients verify the year 2000-readiness of their payroll system. As part of the effort, ADP will host the testing and serve as originating payroll provider. The goal is to achieve successful data transmission between ADP and financial institutions for payroll processing, direct deposit and check reconciliation.

Banks and other financial firms are required to demonstrate the readiness of their payroll processing capabilities to the Federal Financial Institutions Examinations Council by this spring. ADP will post test scripts and results of the tests on its Web site *(www.adp.com)* for financial services clients who aren't directly participating.

No Embedded Systems Armageddon

Giga Information Group Inc. said its ongoing year 2000 research doesn't portend an "embedded systems Armageddon." According to the Cambridge, Mass., firm, the impact of the year 2000 date rollover on embedded systems won't have the crippling effect originally expected. The research shows that many industries, especially heavily regulated ones, have done significant work in preparing for the year 2000. Embedded systems are processors contained in electronic products not classified as computers, such as medical devices or manufacturing control systems.

SNAPSHOT

Missed Deadlines, Continued Glitches

44%	Have already experienced a year 2000 problem
60%	Have missed year 2000 project deadlines

Base: 114 IT directors and managers at U.S. companies

SOURCE: CAP GEMINI AMERICA INC., NEW YORK, RUBIN SYSTEMS INC., POUND RIDGE, N.Y.

RUSSIAN Y2K: BAD, NOT A DISASTER

Missiles aren't a problem, but agencies face incompatibilities in infrastructure

WILL RUSSIAN ballistic missiles fire themselves at the U.S. on Jan. 1, 2000?

Probably not, but there are plenty of other year 2000 concerns that Russia is wrestling with, including the viability of its banking system and connections among government agencies, acknowledges Prof. **Andrey Nikolaevich Terekhov**, a Russian computer scientist who has been described as "the Peter de Jaeger of year 2000 in Russia."

Besides advising the government on year 2000 issues, he's a board member of Lanit Holding, a Moscow-based systems integrator recently certified as Russia's first year 2000 readiness center.

In his first-ever interview with a Western journalist, Terekhov, 49, recently spoke with *Computerworld* senior editor Thomas Hoffman.

Q: *Western analysts have speculated that Russia's early-warning radar systems are probably more susceptible to year 2000 glitches than its nuclear warheads.*

A: I absolutely agree. General Yakov [who's in charge of strategic missile systems in Russia] has said that rockets and launch controls are [year 2000] ready. But it doesn't mean that all of the interconnections are ready. They have only checked the embedded systems in the rockets.

Q: *What are the chief year 2000 concerns in Russia?*

A: The main problem is not the rockets but the infrastructure. There are so many networks in place [among Russian government agencies and companies in the private sector]. For example, one agency will have programs that work with day/month/year and another uses month/day/year. There could be troubles with the interfaces between them, even if the applications themselves are fixed.

ANDREY NIKOLAEVICH TEREKHOV: Russia's railway, telecom sectors lead in Y2K repairs

Q: *Which organizations are furthest along with year 2000 preparations?*

A: Some of them are very clever and advanced. The Russian railway has fixed almost all the problems with its ticketing systems. The most advanced and most safe is the telecommunications sector.

Q: *How susceptible are private companies in Russia?*

A: Gazprom [Russia's largest natural gas supplier] and other advanced companies are very automated. It would be a mistake to think that they don't use modern networks.

Q: *How severely have Russia's economic problems cut into year 2000 funding?*

A: Many of the state agencies, which I can't name, understand the problem and they understand our approach [to fixing the problem] and are ready, but many of them say, 'We have no money.' We have enough programmers; the only disadvantage is money.

Q: *Where will they get the money from?*

A: It was announced that money for nonprofit ministries like defense, social and labor would be made available [by the central government]. And [despite Western opinion], there are successful companies in Russia. They pay huge taxes, so this is a help. ◗

Leaders Target Laggards for Acquisitions

Y2K-readiness now a strategic weapon

BY RICK SAIA

Some companies that deal with the year 2000 problem more effectively than their competitors can get another strategic leg up — by targeting nonready companies and acquiring them, according to a Miami consultant.

In the banking industry, for example, several firms are allegedly making "explicit strategic moves" around the year 2000, said William Smith, a director at AnswerThink Consulting Group *(www.answerthink.com)*. "They have their internal systems and processes well under control — and are seeking acquisition targets that have not," he said.

Lou Marcoccio, a year 2000 analyst at Gartner Group Inc. in Stamford, Conn., agrees that year 2000 will be a factor in mergers and acquisitions this year and next. A company that has done more on the year 2000 front can "typically" become a stronger merger partner, he added. Marcoccio said he has seen year 2000 factor into mergers in the banking, oil, pharmaceuticals and food-processing industries.

Smith said companies behind on their year 2000 work could lose market value and be attractive buyout candidates.

Yet a buyout could be a golden opportunity for an information technology leader at the acquiring firm to rise to the fore as a strategic thinker, Smith said. If he can show his senior executives how the IT systems work in both companies, and demonstrate how they relate to the competitive landscape, he can lead the firm to decide if there's an opportunity it can exploit, he said.

Small banks with noncompliant systems are potential takeover targets, Smith said.

But before jumping to acquire them, officials at a larger bank whose year 2000 house is in order should ask if doing so would allow them to one-up a competitor.

The bottom line, Smith said, is that disruptions such as the year 2000 "create short-term problems, but they also create long-term opportunities." ◗

SNAPSHOT

Competitor Comparison

Will the skies be friendly on Jan. 1, 2000? Here's what the top three U.S. air passenger carriers are spending on year 2000:

	AMR CORP. (American Airlines)	UAL CORP. (United Air Lines)	DELTA AIR LINES
Fortune 500 rank	70	75	101
Spending as of Sept. 30, 1998	$152M	$23M	$53M
Estimate of total Y2K cost	$215M to $250M	$70M	$160 to $175M*

* From Form 10-K filing Sept. 28, 1998

SOURCE: FORM 10-Q FILINGS (ALL DATED NOV. 16, 1998) WITH SECURITIES AND EXCHANGE COMMISSION

TRAINING TAKES TIME, BUT PAYS OFF

Consultants offer tips on how to maintain skills on the job

BY LESLIE GOFF

TRAINING IS a budget double whammy: in lost work time and hard currency. Here's how five information technology consultants find the time and money.

Q&A

CW: What was the last training you undertook and why?

KAISER: A one-day Microsoft SQL seminar on the update from Version 6.5 to Version 7 in October from a certified third-party vendor in Manhattan. I try to stay aware of what the vendors are doing — that drives 75% of my training because clients usually react to what's available in the market.

MARSH-ROBERTS: Project management training with Jerry Weinberg, a project management guru. It was a one-week course, called Problem Solving Leadership. I also took some accounting-related technology courses to keep up with my [certified public accountant degree].

MURIEL: Most of the training I have gone to lately has to do with networking. About six months ago, I took a two-day refresher course on NT, offered by an authorized third-party vendor, at the end of a business trip to California. It dealt with how to set up NT for Internet connections.

CW: What kind of programs do you prefer?

FERGUSON: Self-study. I just like to jump into it. I have three networks installed at my house — an NT, a Novell and a peer-to-peer Windows 98 network, with two PCs on each. I also have a Unix network partitioned on one of them. So I flip back and forth on those to learn new things.

RAWLS-RILEY: I buy the package and learn it. Sometimes I use books. When I use the applications myself, I learn them from a user perspective, so then I know what's important to my clients. I also attend the one-day sessions from vendors.

CW: What kind of training do you avoid?

KAISER: Older products — things I know are going offline. Also, things that seem to be too broad — like a $1,800 course on "Where Is DVD Going?"

RAWLS-RILEY: Longer seminars, because of the time and expense. The last time I looked at a weeklong session, it cost about $1,000. It was on systems administration for a specific package. But that wasn't within my budget or time restrictions.

CW: What kind of business training do you pursue, and how important is it compared with technical training?

RAWLS-RILEY: I took [a] business planning course because I felt I needed a business plan and that one is a well-known, good program developed by the Kaufman Foundation for Entrepreneurs.

MURIEL: Business training is essential, but I don't take as much as I should. I pretty much learn that as I go.

MARSH-ROBERTS: If your primary problem is that you aren't marketing well, then that should be next on your list. Lots of people need training in how to run a business, and their best investment is in either an accounting course or a basic business class.

CW: How much time and money do you spend on training in a year?

FERGUSON: The time I spend on training is really a function of what I can afford — knowing how much time I can sacrifice and whether I want to eat steak or chicken; what is going to pay off right now and what's going to pay off later.

MARSH-ROBERTS: I've spent about $3,000 this year — about $2,200 for the project management seminar, including travel and lodging, and $700 to $1,000 for my CPA continuing education courses. Those are usually one full week.

MURIEL: I attend short seminars about four times a year, but I have not done any long classes in a long time — those become really hard to justify. Factoring in travel, I probably spend a couple thousand dollars. But to me, training is a necessity, not a luxury.

CW: How do you choose which training to squeeze into your budget, and how do you fit it into your schedule?

MURIEL: You have to make choices based on what you specialize in because you can't do it all. Time is limited. A seminar must have some relationship to what I'm doing. The Independent Computer Consultants Association conference is good for getting new ideas and for networking with colleagues.

KAISER: About 75% of what I take is driven by vendors, and about 25% is driven by client needs. Everything we do here — Visual Basic, C, HTML, Java, SQL — is involved in the Microsoft BackOffice products, so I keep an eye on the Microsoft Developers Network, and they send out E-mail notifications of new courses.

MARSH-ROBERTS: You make the training commitment far enough in advance [so] that you can be sure your commitments to clients get met somehow, somewhere, whether it means bringing in an extra person or working extra hours for three weeks before the training. There are crises in projects, and you adjust your schedule when they happen.

RAWLS-RILEY: You really need to think of training as an investment in yourself — it's ultimately something you bring to the table. Your expertise is what people will buy. So you need to be creative, and check out all the possibilities, and take the initiative to do it. If you wait, you may become obsolete.

CW: What's on your training wish list and why?

FERGUSON: SAP — I have no clue how it works. If someone would treat me to two weeks of SAP training, I would stop what I'm doing and go right now. I hope that by the middle of next year, if I'm not too tied down with Y2K, to take an introductory course and get the software and start using it.

RAWLS-RILEY: I think I'll take some more business training. And I may need to expand more on the systems side. It would be helpful for me to know NetWare or NT, but until I can afford a full week off, that won't happen. ◗

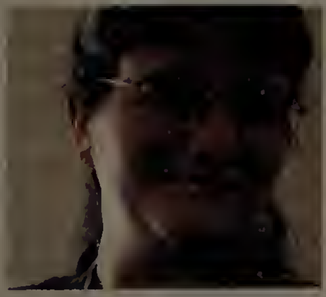
Goff is a freelance writer in New York. She can be contacted at lgoff@ix.netcom.com.

Panelists

Wendell Ferguson, partner, Cager & Ferguson Computer Consultants, Oakland, Calif.
Also an instructor at California State University, Hayward.
Consulting for six years; specializes in network design, systems upgrades and troubleshooting.

Robert Kaiser, principal, Big Dog Media Inc., Hoboken, N.J.
Consulting for 10 years; specializes in Web site design and electronic commerce.

Luis Muriel, principal, LAM Computer Consultants, Boca Raton, Fla.
Consulting for six years; specializes in systems and network installation and integration.



Becky Rawls-Riley, president, Operating Sooner Inc., Olathe, Kan.
Also president of the Kansas City chapter of the Independent Computer Consultants Association (ICCA).
Consulting for almost three years; specializes in computer support for small to midsize businesses.

Sharon Marsh-Roberts, independent consultant, Linden, N.J.
Also national chairman of the ICCA.
Consulting for 11 years, specializes in developing financial and accounting systems.

NEW REPORTS

Data Center Consolidation

International Data Corp. released a research bulletin last week that outlines the costs and benefits of data center consolidations.

According to the Framingham, Mass., company, which is a sister company to *Computerworld*, data center consolidation is risky but can save hundreds of thousands to millions of dollars.

The report, "Data Center Consolidation: Issues and Concerns," presents case studies of both successful and not-so-successful projects and provides guidelines for dealing with issues such as heating, cabling and electricity.

The report costs $1,500.

IDC
(508) 872-8200
www.idcresearch.com

Bank Recovery Spending Is Up

Mentis Financial Services, a Gartner Group Inc. company, reports that banks are increasing their implementation of disaster-recovery systems.

The findings are contained in "Disaster Recovery Strategies and Solutions for Banking," a study from the Durham, N.C., company. While recovery expenditures for the banking sector were estimated at $148.8 million last year, the study finds that spending is expected to increase at a compound annual growth rate of 7% until 2000.

The study costs $2,000.

Mentis Financial Services
(919) 384-1500
www.mentis.com

IT Trends on Two Business Levels

Whittman-Hart Inc. has released "Middle Market Monitor," a survey report that compares the results of interviews with 200 middle-market information technology professionals with the results of interviews with 100 IT professionals at Fortune 500 companies.

According to the Chicago company, one key finding of the research, conducted by San Diego-based CIC Research Inc., is that companies with $50 million to $500 million in annual revenue spend an average of 5% of revenue on technology, contrasted with Fortune 500 companies, which spend an average of 14% of their revenue on technology.

The report is available online at no charge.

Whittman-Hart
(312) 922-9200
www.whittman-hart.com

Knowledge Management

Butler Group last week released a report that details what is needed for an effective knowledge management strategy.

According to the U.K. firm, knowledge management concerns both IT issues and the inherent culture of organizations.

The report covers issues such as data warehousing and data management, and the proper framework for a knowledge management strategy.

"Knowledge Management" costs $820.

Butler Group
44 (0) 1482 586149
www.butlergroup.com

BRIEF

Electronic Negotiator

Negotiator Pro Co. in Brookline, Mass., has released Negotiator Pro 5.0, the latest edition of its software that helps users develop strategies.

It includes programmed questions and Web links to related issues and has role-playing packs and spreadsheets and charts for tracking complex equations. Pricing starts at $190.

JIM CHAMPY

Why Web won't kill middlemen

PREDICTING THE FUTURE is a dangerous game — unless you don't have any business riding on what you see in your crystal ball. That's the condition for most futurists: They predict, we listen, and most of the time we take the business risk. So it's worth keeping score of predictions. Here's one I think is wrong — the demise of the middleman.

Several years ago, strategists and futurists began predicting that companies would increasingly sell directly to consumers, cutting out distributors and any other distribution intermediaries, including some retailers. The change was given a fancy term: disintermediation.

There are certainly some great examples of disintermediation at work, such as Dell Computer's direct-to-the-customer strategy. But I don't assume that most manufacturers will be selling consumer-direct very soon.

Why? Because most manufacturers don't understand consumers well enough to deal with them directly. When they think of consumers, they think of marketing — pushing their products instead of trying to understand real consumer needs. It's a natural phenomenon. Most manufacturers, especially those dealing in technology, are product-driven. They focus their energies on making stuff, while someone else worries about getting the stuff to the customer.

But there's also another phenomenon that's supporting the rise of a new class of middlemen. It's that consumers today often want products and services packaged in different ways to meet their specific needs. I call the middlemen who do this work *consolidators*. They stand in the middle of a distribution channel, somewhere between manufacturers and consumers. And they come in various forms — some old, some new.

For example, there are the food home-shopping services that provide a combination of service and products. In the Northeast, Hannaford Brothers, a large food retailer, operates Home Runs (*www.homeruns.com*). Just order $60 or more in food by fax, phone or over the Internet, and your order is delivered to your kitchen, free of charge, the next day during a two-hour period you specify. Pricing is competitive.

In one sense, the famed Amazon.com isn't just a retailer. Rather it, too, is a consolidator. It assembles products and search and delivery services in a manner that responds to a specific consumer need.

> *Amazon.com isn't just a retailer. It, too, is a consolidator.*

And consolidators aren't limited to companies that deal only in the combination of products and services. There are consolidators that just put services together. Take Fidelity's Charitable Gift Fund service. It stands between an individual donor and a charitable beneficiary.

Here's how it works: Make a gift to the fund at your convenience, place its investment into any number of Fidelity's mutual funds and then, over time, direct the fund to make grants from your account to charities of your choice. It has the convenience of a private foundation and little of the cost and administrative headaches.

And then there are all the telecommunications companies and utilities that aspire to sit between you and your bank, health care provider and airline. They want to package and sell you as many products and services as you will buy.

No one has done it at scale yet, though IBM's Integrion banking consortium and the Microsoft-First Data TransPoint partnership aimed at allowing customers to pay all their consolidated bills over the Internet come closest. That means wide opportunity.

But what does it mean for information technology?

First, get excited, because IT is the real enabler of these kinds of consolidator businesses. There's much more ahead in 1999 than the boring work of Y2K. There's the need to figure out how to put together the systems that will assure a food delivery within two hours, that will let consumers shop online as they wish and that will manage, track and spend money in new ways.

There's complexity in making consolidation work. But it's also the opportunity for IT — at long last — to participate in real business creation. ◆

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. His Internet address is JimChampy@ps.net.

JAMES KACZMAN

RECRUITING BIG AS A SMALL SHOP

When it comes to luring top IT talent, good things really can come in small packages. The key: Emphasize contribution, communication and quality of life

BY STEVE ALEXANDER

IT'S GETTING TOUGHER for small information technology shops to hire in competition with the big guns. But if you're trying to recruit top IT talent to a smaller company, don't despair. Managers and employees alike attest that small shops can compete by promoting nonmonetary incentives such as a wider variety of work experiences and a better quality of life.

"There is a competitive advantage in being a smaller shop," says Norman Imamshah, director of computing and telecommunications services in the 48-person IT shop at Central Washington University in Ellensburg, Wash. "We know our clients very well, so there is a greater bond between the IS professional and the client to whom we are delivering service. Our IS people feel wanted, feel they belong."

Imamshah acknowledges that his staffers can easily leave and get substantial raises "by going over the mountain pass into Seattle. But by staying here, people can make a difference."

Imamshah says he could double his $75,000-per-year salary by moving to a corporate job in Seattle, 90 miles away. A network engineer who works for him, who has more than three years of wide-area network experience, could increase his $45,000-to-$50,000 salary to $80,000 by making the move to Seattle. An assistant director of applications programming, who was paid $50,000 per year, recently left his staff for a job in Seattle that pays $70,000.

A smaller IT shop can often offer better training, varied experiences, higher involvement in decision-making, greater personal recognition — and more fun, says Hal Corner, vice president of MIS at ice cream retailer Baskin-Robbins Inc. in Glendale, Calif.

Workers in a small IT shop "can tap in to technology that is outside the narrow, siloed scope of a larger organization," says Corner, whose IT department employs just under 40 people. "I've taken the tack that I want my staff to leave here better prepared than they came. And that tends to attract people and keep them longer because they will learn here."

Corner says the things employees can gain that have lasting benefits include Novell or Windows NT certification, experience with multidimensional databases and leadership training.

Vince Sabia, vice president of MIS at the 35-employee IT shop at Fortunoff Fine Jewelry in Uniondale, N.Y., also stresses the wealth of professional experience that can be found in a small IT shop.

"Programmers here get involved with the entire project. So they get a wider variety of experience working for us as opposed to working for a large bank, where all they would do is code," Sabia says.

"So after a few years of experience here, a person has a wide knowledge of what the retailing industry is all about, not only from the IS point of view but from the operations point of view. If that person goes to another company within the retailing industry, he or she will be on a different level than a person without that broadening experience," Sabia says.

Dave Krohn agrees that small shops can offer a broader spectrum of professional experience than larger shops. "You have a wide variety of tasks and see all parts of the shop," says Krohn, an IT project leader who has worked 10 years at Terra Industries Inc., an agricultural fertilizer manufacturer in Sioux City, Iowa. "I've done applications, maintenance, new-development programming and software installations for purchased packages."

In an IT shop larger than the 65-employee Terra, "I'd be concerned about just being another number, just doing my certain thing and never seeing the full picture," Krohn says. In addition, a small shop can offer flexible working hours and only a modest amount of overtime work, he says.

Smaller shops also can offer more personal recognition, says Laurie Rauch, CIO at Terra. "In a smaller shop, I know everyone by name, and when I think about projects, I have the ability to consider individual career paths," she says.

Corner adds, "I can't tell you the number of people who have said they never met the vice president of IS [for instance] as frequently as they have at this place."

But stress, a frequent complaint in larger IT shops because of heavy workloads, isn't likely to be any less a problem in smaller IT shops. "I think it's the same as in larger shops. And we have even less flexibility overall when it comes to who's available to work on something," Rauch says.

Though smaller IT shops are sometimes forced to recruit locally rather than nationally, savvy managers can recruit people from their region of the country even though those IT workers no longer live in that region. For example, Rauch has learned that Terra's location in a small Midwestern city of 75,000 people could be a recruiting advantage.

"Iowa has a reputation for education, but it loses people because it can't give them jobs," Rauch says. "Sometimes, when people have experience and kids, they want to come back to the life they left. The advantage I have is that I'm attracting IS people who want to come back here anyway."

Gene Rau, who in October took a job as Central Washington University's assistant director for applications, says small-town IT shops should focus on recruiting people from small towns. "There's hardly anybody here who grew up in a big city," he says. ◗

Alexander is a freelance writer in Edina, Minn.

Getting a Full House

IT managers cite the following steps that small IT shops can take to boost their appeal:

BE A MORE MODERN WORKPLACE

For example, Baskin-Robbins hired consultants to help change its traditional IT hierarchy into a team structure that would encourage more individual participation and responsibility. "Many of the Generation-X personnel need a high degree of involvement in the decision-making process," says Hal Corner, vice president of MIS.

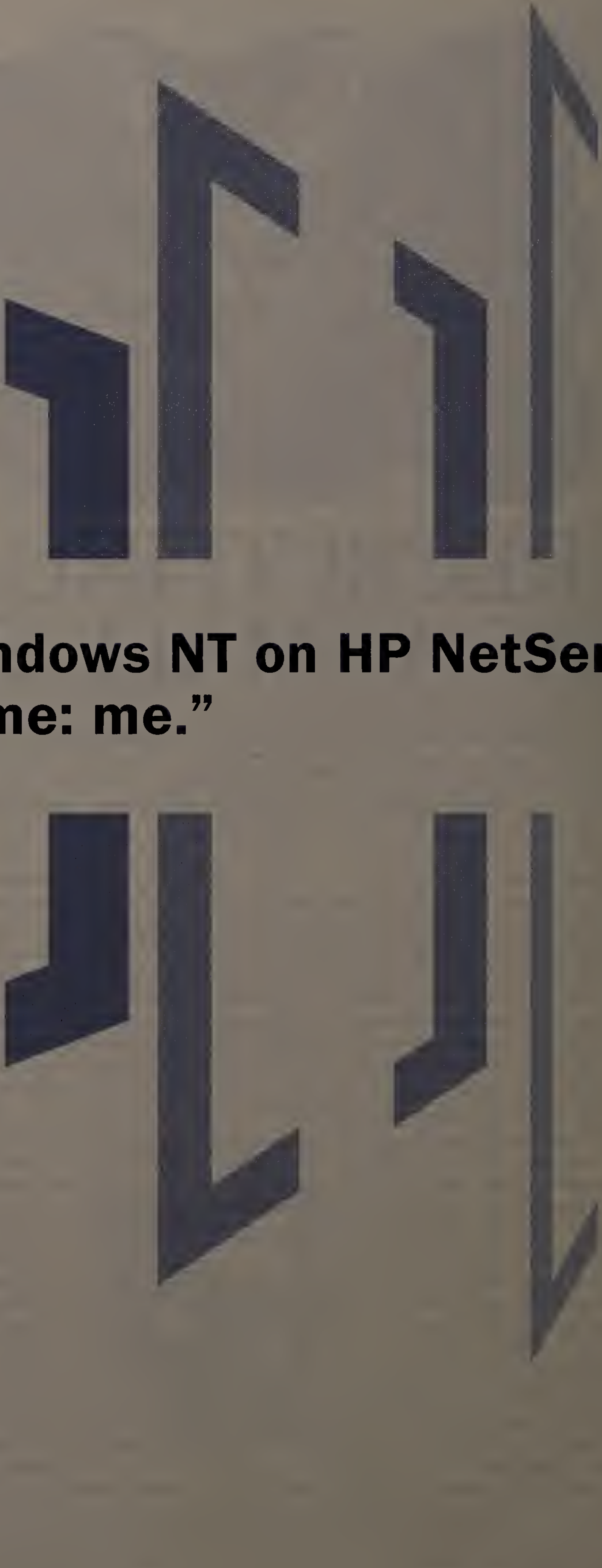
HAVE MORE FUN

Baskin-Robbins created a "fun committee" that has planned events, including summer sports, long lunches, a murder-mystery dinner and a play with mock Academy Awards.

BE MORE FLEXIBLE

"You can't have management say that one size fits all and this is going to be the way our shop works," says Laurie Rauch, CIO at Terra Industries. "We've got to emphasize that we are a good place to work."

Shops can stress environment. Norman Imamshah at Central Washington University, sounding a bit like the chamber of commerce, says, "This is a small city. Everybody knows everybody else, and it's a nice place to bring up a family. We have a pleasant climate; we're called the Palm Springs of Washington. And we're two hours from Seattle, so you could go to the symphony there." – *Steve Alexander*



“Since installing Windows NT on HP NetServers,
determines downtime: me.”

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, only one thing

"It was like a startup opportunity: two of our subsidiaries merged into one new location. Bottom line? On day one, 500 employees came in, logged on, and worked as usual. And in the year since installing Microsoft® Windows NT® Server 4.0 on HP NetServers we haven't had any unplanned downtime. This is great news for the entire IT staff—all five of us."

Ray Kump, Director of IT
Mitsubishi Electric Automation

Windows NT®
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Parting Shots

Exit interviews can help you improve your IT organization — especially if you set the proper mood and ask the right questions

By Rick Saia

Q: Why is an exit interview like a vaccination?

A: It may hurt for a second, but it can help your organization stay healthy.

An exit interview, in which a departing employee is encouraged to talk openly about his work experience, has long been a common practice.

But for companies — especially those that are losing the information technology recruiting and retention wars — exit interviews are becoming critically important.

It's a lemons-to-lemonade opportunity to find out why employees are leaving.

IT managers say it's particularly valuable when you learn something new and unpleasant about your organization.

Julian Kaufmann remembers the stunning wake-up call he received from a departing IT employee.

For the employee, the job change meant more money and responsibilities.

But what really stung Kaufmann, who heads the human resources function for AlliedSignal Inc.'s IT organization, was hearing that the employee started looking because he felt "he didn't have any opportunities" to grow.

When he heard the same thing in other exit interviews, Kaufmann says, the company had to take corrective action.

The solution? AlliedSignal published a weekly list of every open IT position in the company and distributed it to all IT personnel.

That strategy carried a message, Kaufmann says.

It's " 'I care more about your career development.' It's in your face; you cannot deny it," Kaufmann says.

Exit interviews can also help expose bad managers, inadequate pay and benefits and clunky processes — in short, anything that can keep your organization from keeping and attracting quality people.

SOME OF THE THINGS Don Harris heard in exit interviews have helped Belk Store Services cut IT turnover by more than half

WILL MCINTYRE

Hard Lessons at Belk

In 1995 and '96, Belk Store Services Inc., which handles IT for Charlotte, N.C.-based retailer Belk Stores, watched a good chunk of about 200 staffers leave. "We basically averaged low-to-mid-20% turnover" in each year, recalls Don Harris, *(don_harris@belk.com)* manager of staff development.

From what he was hearing in exit interviews, Harris found several areas to attack.

One was communication. "We found out that we weren't doing a good job at keeping our folks informed" about company news at privately held Belk, Harris says.

To correct that, managers were given formal training in communications. Now, after Belk's senior executives give managers information to pass on to their direct reports, the managers must do so within 24 hours.

Another problem area was job assignments. Belk counters that by asking staffers, at the end of each year, where they would like to be assigned the following year.

For last year, Harris says, 92% of first and second choices were honored.

Today, Belk's annual turnover rate has been slashed to 7% to 8%, Harris says. "We're pretty happy with that."

Conducting the Interview

IT managers have some tips that can help you get the most out of an exit interview, including the following:

▸ Location. Hold it in a neutral location such as a conference room. A departing employee may feel more comfortable and talk more openly, Harris says.

▸ Time of day. Morning is best, advises Toni Cice, director of employee and facility services at Olin Corp., a manufacturer in Norwalk, Conn. Cice says people tend to feel fresher in the morning and usually have more to say.

▸ Attitude helps. Tell the interviewee that you sincerely want to find out why he's leaving and schedule a particular block of time for the interview, Harris suggests. You won't get honest answers with a "let's just do it and get it over with" attitude.

▸ Dig deeper. If someone mentions a problem he had on the job, get specific to find the real reasons, Harris adds. For example, mentioning a bad project is common among IT people, he says, but if more detailed questions uncover a problem among training project managers, say, you may have found an area that needs attention.

Worker's Market

IT professionals know that their talents travel well, and "their loyalty tends to be proportional" to what their employers give them, says Edith Martin *(dremartin@aol.com)*, a former CIO at Eastman Kodak Co. in Rochester, N.Y.

Exit interviews are especially important today because they can turn up work-family balance issues.

With their technical know-how, Martin says, IT professionals may be the most at ease in working from home.

A "very high-quality" exit interview will uncover things you're unaware of, says Martin, now a consultant in Jackson Hole, Wyo.

Listen, and you can learn a lot about working conditions, pay, benefits and how management is perceived.

Managers can find that their perceptions in those areas may be false, Martin says.

If you're listening well to your staff, or if there are some known negative aspects of work that everybody knows, then "an exit interview should only confirm things you already know," Martin says. ◗

Saia is Computerworld*'s senior editor, Managing. He can be reached via E-mail at rick_saia@computerworld.com.*

Getting to the Heart Of the Departure

You may extract some telling answers from departing IT professionals by asking any of the following questions:

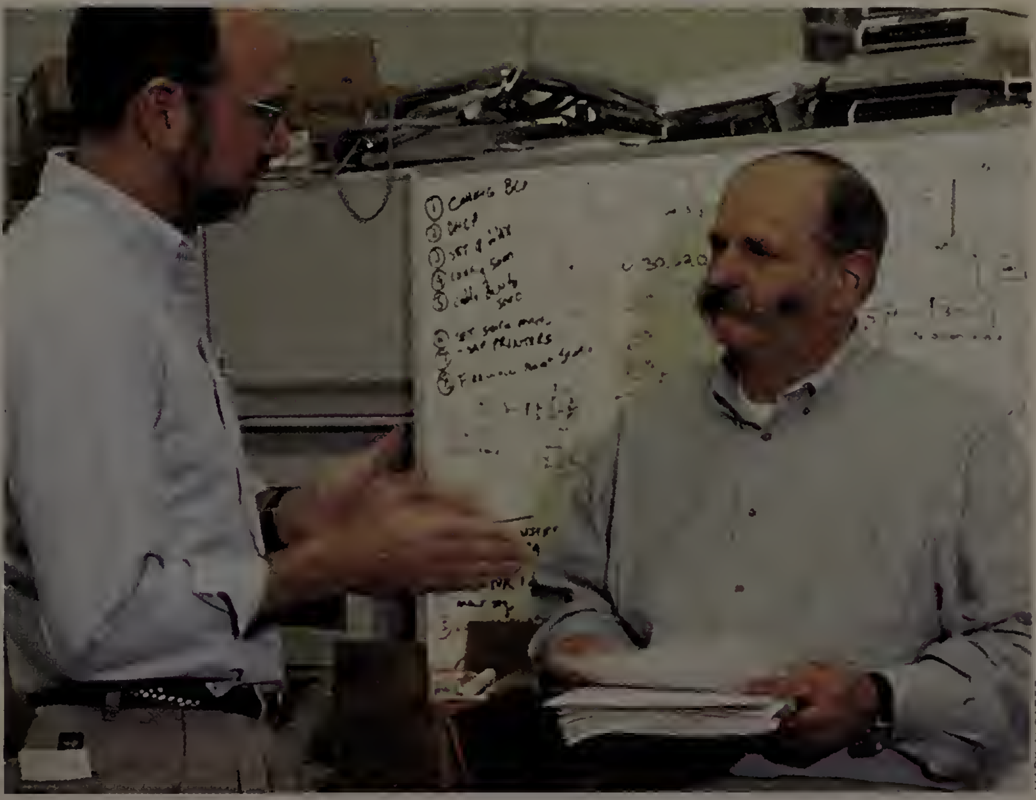
"What attracted you to move on to this other opportunity?" Al Schmidt, CIO at Olin, says that if the answer is about money, he might use the opportunity to make a counteroffer.

"What type of career development would have made you enthusiastic about staying?" A company not using state-of-the-art technology – or not offering training in it – may be driving out people who want to learn something new, cautions Edith Martin, former CIO at Kodak.

"What do you think of the organization's management team and/or strategy?" With this question, Schmidt says, "they really have little to hold back."

STRONG LINKS IN THE 'CHAIN'

Reebok's *Peter Burrows pushed hard to find better supply-chain technology for his company. His efforts have helped an entire industry By Craig Stedman*



MARK ALCAREZ

REEBOK's PETER BURROWS (right, shown talking to Rich Griffin, network manager at Reebok) had the idea that led to SAP's development of an R/3 supply-chain add-on for the apparel industry

WHEN PETER BURROWS began searching for new software that could manage the global supply chain of contract manufacturers and distributors that keeps Reebok International Ltd.'s sneaker business running, he didn't find what he was looking for.

So Burrows, chief technology officer (CTO) at Reebok in Stoughton, Mass., came up with an idea: Why not get SAP AG to build the needed functionality in to its R/3 applications?

That moment of management inspiration eventually resulted in an innovative deal linking Reebok, SAP and clothing maker VF Corp. in a consortium that jointly paid for and managed the development of an R/3 add-on for apparel and footwear companies. But turning the idea into action took all the ingenuity and tenacity Burrows and his counterpart at VF, Leroy Allen, had to offer.

"We were making up the rules as we went along," Burrows says. "Every day, we had to scratch our heads and figure out how to get it done."

"I think we're going to end up with a good product for our market," adds Allen, vice president of re-engineering at VF in Greensboro, N.C. "But this was a bigger [project] than everybody thought."

Just getting it off the ground was a six-month management challenge that started in late 1995, when Burrows had a dozen Reebok workers go through a six-week R/3 training course so they could show SAP why standard R/3 wasn't up to the task of replacing his mishmash of homegrown mainframe systems.

It still wasn't easy to get SAP to go along. Burrows says the German vendor initially "looked at

Continued on page 60

> Every day, we had to scratch our heads and figure out how to get it done.
>
> PETER BURROWS, CTO, REEBOK INTERNATIONAL

Continued from page 59

our industry and thought it was a mess" because apparel and footwear has complex data processing requirements and is dotted with smaller companies than traditional R/3 strongholds such as chemicals and pharmaceuticals.

But Burrows lobbied SAP nonstop, focusing in particular on enlisting the support of Jeremy Coote, president of SAP America Inc. "I was probably the biggest pain in the neck that Jeremy ever met," Burrows says.

For example, for two months in early 1996 when Reebok and SAP were negotiating the terms of a 75-page contract, Burrows sent Coote a daily fax with smiling and frowning faces and asked him to check one off depending on whether SAP planned to go ahead with the deal.

VF, which makes products such as Wrangler and Lee jeans, was talking to SAP at the same time. "We kept telling them that there was nothing out there for the apparel industry," Allen says. Having Reebok saying the same thing on the footwear side helped bring SAP around, he adds. Reebok and VF signed separate deals with SAP, then agreed in the spring of 1996 to combine their efforts.

Inside Reebok, Burrows noted that teaming up would help save the company from a year 2000 mainframe fix and bring home the new applications it needed for less money than what an internal project would cost.

To make it harder for SAP to back out, and to further reduce Reebok's bill, Burrows wanted one more prospective R/3 user to come along for the ride. But the project was on the verge of falling apart for lack of another participant. Just before giving up, Burrows had another inspiration: convince the company's U.S. branch, SAP America, to sign on as the third member under the premise it would represent some yet-to-be-named customer companies in the U.S.

That saved the consortium, and Reebok and VF rushed to put together more than 1,000 design specifications. The next challenge was trying to keep the project from mushrooming as SAP began marketing the upcoming software to more apparel makers.

"Scope creep is death," Allen says. "You really have to lock the requirements down up front." To keep things moving forward, other apparel and footwear companies were allowed to take part in design reviews but not to vote on development plans.

A consulting firm was brought in to help break tie votes between Reebok and VF and then to manage an eight-month software testing program for the two companies.

Not everything went like clockwork. The software was released three months late last April, and VF didn't get what it considered a working version until September. Its rollout is due to start in three months, but Allen says the full order-management capabilities VF needs still won't be ready until the fall.

"I think SAP underestimated the amount of change that had to be made to standard R/3," Allen says. And better project management by VF and Reebok might have helped them convince SAP to assign more developers, he adds.

Burrows says Reebok is also awaiting more sophisticated order-management functionality, although the software is already being used in its golf shoe division and to process some international orders.

"The job was a lot bigger than we thought it would be," Burrows says. "But we're still within the realm of me being able to save my life." If all goes well, he says, almost all of Reebok's supply-chain processing should be switched over to R/3 this year. ◗

Stedman is Computerworld's *senior editor, client/server software and Unix applications. He can be reached at craig_stedman@ computerworld.com.*

STRONG LINKS

At Nabisco, *Joe Wisdo's knowledge of technology and business is helping drive growth, efficiency between food makers and grocers By Nancy Dillon*

JOE WISDO BEGAN his 25-year Nabisco career as a lowly inventory analyst fresh out of Pennsylvania State University. Today, he's the acknowledged supply-chain guru at Nabisco Inc.'s U.S. Foods Group, working on a pilot that not just Nabisco, but the whole food industry, is watching.

Wisdo represents a rare "combination of technological understanding and business acumen," says Joe Andraski, Nabisco's recently retired vice president of customer development. Andraski says he relied upon that combination of skills when he spearheaded an avant-garde sales forecasting collaboration with Wegmans Food Markets, a 57-store grocery chain and major Nabisco customer based in Rochester, N.Y.

"All too often you have people on the technology side telling you why you can't do something innovative," Andraski says. "But this didn't happen with Joe."

Andraski says the Nabisco/Wegmans venture grew out of a new industry initiative called Collaborative Planning, Forecasting and Replenishment (CPFR), which was designed to improve the supplier/retailer partnership through co-managed processes and shared information. Andraski says Wisdo quickly signed on to plan the pilot.

Wisdo says he didn't receive a formal budget to bring technology to the Wegmans project, but that wasn't an issue. "I just knew I had to get creative," he says. "We negotiated various testing deals with [our software vendors] and just tried to free up people as best we could." Wisdo — whose formal title is senior director of sales and logistics information systems — estimates the cost for pilot-related time and effort at between $100,000 and $200,000. "But we didn't actually spend this, we just added the work to what we normally do every day," he says.

At the project's core was the exchange of sales and promotional data to arrive at a joint sales forecast for Nabisco's Planters nut products. Nabisco's payoff was the intelligence to match Planters' inventory to Wegmans' needs. A major benefit to Wegmans was the avoidance of panicked overstocking because of promotion-related spikes in demand.

Results after a 13-week-long test last summer yielded a 36% increase in sales for Wegmans. Despite the higher volume, Wegmans says it was able to chop the average Planters inventory it warehoused from 14.1 days of sales to 11.6 and still do a better job of filling orders from the stores [CW, Oct. 19].

"Nabisco is a key player with CPFR. They're on the vanguard," says Larry Lapide, a supply-chain analyst at Boston-based AMR Research Inc. Lapide considers Nabisco a leader in doing things electronically and advancing guidelines that can be applied across a customer base. In essence, he says Nabisco's current pilot activity is "paving the way" for CPFR activity throughout the retailing industry.

To handle the data exchange with Wegmans, Wisdo first tried a pre-CPFR version of NetWorks software from Manugistics Inc. in Rockville, Md. He says the software met the pilot's most basic data exchange requirements, but "a lot of the immediate work was still done over the phone." He says it wasn't until he got on the phone and got his hands on a test copy of the upcoming NetWorks release that the electronic exchange process gained "true" two-way communication.

Now, pilot participants on both sides log on to a single server-based electronic-commerce application. The users also have gained the opportunity to help Manugistics iron out the software's kinks.

Wisdo says end-user anxiety was a big part of adding electronic data exchange to the pilot. "When most people hear that they're going to be a beta site for something, they show immediate signs of alarm," he says. "And the truth is that most software never really works when you're the first one using it."

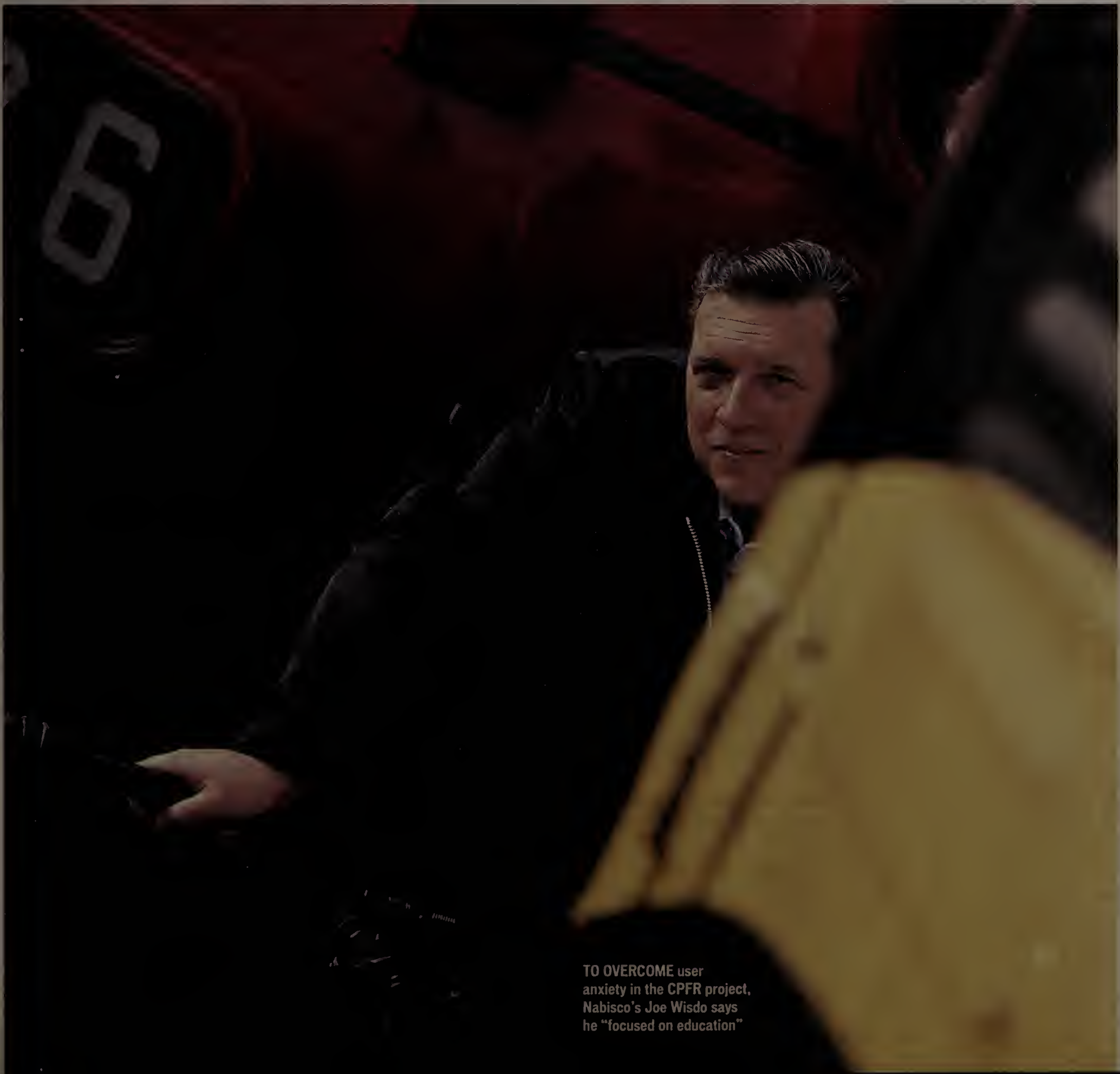
To help overcome user anxiety, Wisdo says he "focused on education" and even brought his project team at Manugistics in to help with end-user training. "It just takes a lot of communication ... it's just lending insight into typical beta activity, explaining that problems are not unusual," he says.

As the technology for CPFR improves, Wisdo says he hopes that projects after the Wegmans venture gradually will be bigger. That's important because the success of the Wegmans pilot has spurred plans to get four similar pilots up and running — including one at Bentonville, Ark.-based Wal-Mart Stores Inc. and another at Schnuck Markets Inc. in St. Louis.

> The truth is that most software never really works when you're the first one using it.
>
> JOE WISDO, NABISCO'S SUPPLY CHAIN GURU

"So far, we can all stand up and say that [CPFR] works," Wisdo says. "But the technology still needs help adjusting to the process." ◗

Dillon is Computerworld's *staff writer, new products, multimedia and storage. She can be reached at nancy_dillon@computerworld.com.*



PETER SERLING

TO OVERCOME user anxiety in the CPFR project, Nabisco's Joe Wisdo says he "focused on education"

THE TRADE SHOW FIND-A-JOB GAME

BY JILL VITIELLO

INFORMATION TECHNOLOGY professionals often attend industry conferences not only to learn new skills and see the latest technology, but also to look for new jobs. Even if you don't have an ulterior motive, "attending a conference is a great way to network," says Richard Wonder, president of Richard Wonder & Associates, a technical recruiting firm in New York. But using an industry conference as a job fair requires some finesse. Here are some tips on how you can win the game of landing a new job at your next trade show visit.

Object of the Game: Generate job offers as a result of attending an industry conference.

How to Play: Persuade your current employer to pay all your expenses for attending the conference of your choice. Once there, impress potential employers and subtly convey interest in "new opportunities." Return to the office with plenty of useful information for the boss and colleagues. Deftly field follow-up calls from executive recruiters and hiring managers. Consider new job offers.

Players: The game is appropriate for one or more players. It's open to IT professionals working in corporate settings as well as contractors, consultants and IT professionals at vendor companies.

Venues: Nearly any industry conference provides ample opportunity for job seekers. Some huge events, such as Comdex in Las Vegas, set aside floor space for career fairs. Other organizations, such as the Society for Information Management (SIM), don't permit recruiters to join or attend events and discourage members from overtly seeking jobs or recruiting candidates at functions.

Weapons: Business cards, electronic personal information managers (PIM) and résumés. But beware: over-eager job seekers who carry résumés in their jacket pockets and pass them out all over the trade-show floor are considered gauche. Executive recruiters say it's better to carry business cards and wait to be asked for a résumé.

The Scenario: *It was done in the breakout room, by Mr. Brown, with the PIM . . .*

There's really no mystery to turning your next conference into your own

FRANCISCO CACERES

personal job fair. Select a venue where hiring managers in the field you prefer will gather. Be discreet about your ambitions. Demonstrate your talents.

How to Move: You can learn from the example of Nick Wright. An employee in the technical support department of a software development firm, Wright considered switching from permanent employment to technical consulting.

He attended a conference sponsored by Devon Consulting in Philadelphia, where he learned about pay scales, benefits and technical training opportunities.

Convinced that consulting was for him, Wright joined the firm and landed his first assignment as a Cobol programmer at a financial services company.

He's earning more money and expects to learn C++, PowerBuilder and Oracle software on the job.

When to Pass on Your Turn: Rick J., a systems administrator at a Pennsylvania-based transportation company, attended the same conference and decided not to become a consultant. Rather, he's aiming at "being CIO some day."

He is enrolled in a master's program at Pennsylvania State University, where he studies with industry peers and attends lectures by top-level IT leaders from corporations in the region. "I network within the master's program at Penn," he says.

Playing Your Cards: For ambitious IT professionals, discretion is the better part of valor. "Cruising vendor booths" is a big mistake, says David Sears, president of D. L. Sears & Associates Inc., an IT human resources consulting firm in Morris Plains, N.J. Conferences and trade shows are great places to pick up business cards and brochures and get ideas about job openings, but handing out résumés is "not well received," he says.

Planning Your Strategy: Conference attendees need to remember that many IT jobs are never advertised and that most executive search firms don't want job seekers to approach them, Wonder says. Conferences are an ideal place to be seen, to pick up news and information about other companies and to meet and impress potential employers. Sometimes just having your name and contact information on the attendees' list is enough to generate interest from hiring managers and headhunters, Wonder says.

Taking Control: Even better is landing a spot as a speaker at the conference, counsels Shel Holtz, president of Holtz Communication & Technology in Concord, Calif. Holtz was recently keynote speaker at a webmasters conference in Miami and is in demand as an expert on Web management.

"Becoming known in the industry often puts your name before the people who make decisions about hiring," Holtz says. "A lot of organizations will create jobs just to get the right people on board."

Getting Started: IT has conferences like Baskin-Robbins has ice cream flavors (and then some). To get a sense of which conference may make the best job fair for you, visit these Web sites:

- Women in Technology International sponsors several regional and one annual international conference that aren't just for women. Visit *www.witi.org.*
- For IT professionals who want to develop leadership and other in-demand "soft" skills, Linkage Inc. cosponsors top-notch programs. Visit *www.linkaginc.com.*
- The Communications Managers Association offers career development opportunities. Visit *www.cma.org.*
- SIM is a professional association for CIOs and other senior IT leaders in business and academia. For information on the annual Interchange, visit *www.simnet.org.*

Vitiello is a freelance writer in East Brunswick, N.J.

BUZZWORDS

BY MICHAEL COHN

HOPEFULLY you *don't* know these. You aren't "down with" jargon from the job market. You're clueless on career-changing lingo. Or, at the least, they're words your boss doesn't want you to know.

But if you're looking, thinking about looking or just a deer in the headlights while everyone else in the department is looking, you might want to get up to speed by brushing up on some career buzzwords.

After all, opportunities abound. Study the following terms, and the next time you're gathered for a watercooler conference, you'll know who's going, who's staying and who's going when they *think* they're staying.

The Lexicon:

Acro Up — Polishing the résumé, adding a few background-enhancing acronyms. Emphasis on the three eye-catching abbreviations of 1998: ERP, ERP and ERP.

Backgruined — The perfect candidate accepted another job while you were screwing around checking references.

CITs — Contractor Inequity Tactics. Bold and desperate measures deployed by human resources to retain full-time personnel while the contractor in the next cube is pulling down $95 an hour (tactics such as "Cruller Fridays").

CM — Chief Martyr. Consulting slang for the grossly-underpaid-90-hours-per-week-for-eight-straight-months project leader who keeps the deal afloat with superhuman effort, then winds up with a $14 engraved plaque from some Lexus-driving senior partner.

DTB — Dropping the Bomb. Resigning at the worst possible moment.

Enchiladaed — As in "getting enchiladaed," meaning the interviewer just offered the whole enchilada for you to take the job. Usually reserved for top-notch data warehousing types, network architects or anyone who can spell Y2K.

Fairware — The collection of Web sites and E-mail addresses for headhunters and career fairs. Also known as Headware, Leaveware and No-ware if you've had your résumé electronically rejected at least 40 times by every bank in the Southeast, but you're not bitter about it, honest.

Getting Framed — Being stuck on a mainframe development project.

Getting Painted — Having a headhunter paint you a rosy picture about Java and client/server, but then Getting Framed.

Greenbeans — Fresh-out-of-college consultants with limited job skills.

Greenteens — Fresh-out-of-high-school consultants who can code C in their sleep.

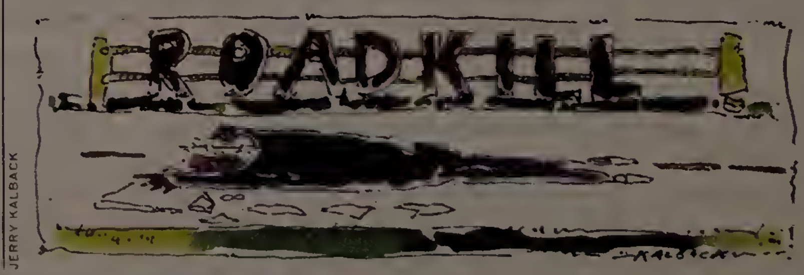
Highering — Interviewing a college kid for a position that pays about $20,000 more than what *you're* making.

Link Analysis — Common usage: "If anyone needs me this afternoon, tell them I'm conducting link analysis." It means leaving at 3:00 to play golf.

Millennicide — Killing your career by working full-time on Y2K.

PERM — Previous Employer Relationship Maintenance. Being mature enough not to burn any bridges . . . at least not until you can steal a few RPG programmers from the place you just left and pick up some fast referral money.

Projectiles — Members of the project team who fly off to other companies as soon as the CM DTBs.



"Pull" Desktop Device-Enabled — Every employee has E-mail.

"Push" Desktop Device-Enabled — Every employee has a stapler.

Road Kill — Quitting to avoid travel. "Joe traveled so much, he became road kill." This usually happens after 12 months of consecutive road trips.

Sunday Surfing — Reading the weekend employment classifieds. Considered very passé.

TBS — 24 by 7 (24 hours a day, seven days a week).

TBS — 12 by 7 (looks like 24 by 7 until the first-shift supervisor leaves, then we get up a game of computer room wastebasket-ball).

TFS — Touchy Feely Session. Usually run by some three-grand-per-day consultant who professes enhanced executive/employee interpersonal communication . . . which means everyone on the bottom rung is about to get a pager.

Vertically Restricted — Job with no chance for promotion.

Vertically Unrestricted — Fired from a job with no chance for promotion. ◗

Cohn conducts link analysis in Atlanta, but usually seven or eight times per hole.

Dear Career Adviser:

I have seven years of Oracle database administration experience and also three or four years of hands-on experience using ERWin and Power/S-Designer. I want to contract and have a couple of questions: First, in choosing among data modeler, Oracle and data architect, which is the hottest and best-paying skill I should emphasize on my résumé? Second, how should I establish my rate? — GOING CONTRACT

Dear Contract:

Two excellent questions. First, take a look at the jobs listed at DICE (*www.dice.com*), which specializes in contract technology job postings. Out of 69,250 job postings, 2,629 are for Oracle database administrators, 1,251 are for data modeling/data modeler, 301 are for ERWin, 73 for Power/S-Designer, and 103 are for data architect. From this small sample, you can see there are far more Oracle database administrator roles. But data architecting and modeling are advanced database skills and are much in demand, so there isn't a "wrong" decision here.

To establish your rate, talk to other contractors and contract houses. Ed Bell, president of Edward Bell Associates in San Francisco, says your location and skills plus the quickly changing market factors, like a client's needs and the supply of available contractors, will determine your rate. Consider too the length of the assignment and the fact that some industries pay better than others. Bell says database modelers and data architects charge more than $100 per hour, though Oracle database administrators most often charge $70 to $100 per hour.

Remember, all this will depend on where you are, your skill level and whether you're a data architect or an Oracle database administrator.

Also check out Janet Ruhl's Real Rates Web site (*www.realrates.com*), which always maintains 52 weeks of data from real consultants. Updated weekly, *www.realrates.com/survey.htm* breaks out compensation by location and specialty. For example, Ruhl shows that out of 42 senior Oracle programmers, the median rate is $60 per hour across the U.S. Hourly rates range from $28 to $120 per hour, with two-thirds clustering between $41 and $81.

Dear Career Adviser:

Although I am only 15, I am a potential programmer interested in finding companies seeking someone to teach their programs. I am willing to train without pay. While I would prefer a games company, how can I find any company that might be interested? — JODIE, JR. PROGRAMMER

Dear Jodie:

You're in luck. Both for-profit companies and nonprofits have begun seeking interns who can work in the data center for pay while still in school. Gary Lech, manager of the information systems division for the city of Walnut Creek, Calif., has such a program and says, "Overall, I'm ecstatic and now find that the program is invaluable to my IT mission at the city."

Whether you're a student seeking an internship or a company wishing to start such a program, for starters, contact the National School-to-Work Office (*www.stw.ed.gov*).

According to Alice Smiler-Ostrovsky, who manages Autodesk Inc.'s Design Your Future (DYF) Internships in San Rafael, Calif., the federal School to Work Act provided grant money for partnerships, and every county in the San Francisco Bay area has a School to Career Partnership. Or you can contact Advocates for Women in Science Engineering and Mathematics (AWSEM; *www.awsem.org*) in Portland, Ore., which works nationally. AWSEM helps companies spearhead technology-mentoring programs for girls and women. These programs are exciting both for students and employee mentors.

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_adviser

At Autodesk, interns administer the DYF Web site (*www.autodesk.com/girls*), and at the DYF annual event held last week, teams of students met with women in high-level technology roles and used Lego computer-aided design tools on PCs to design rides at The Walt Disney Co. Check out *www.autodesk.com/foundation*, and if you find a company that interests you, call!

Dear Career Adviser:

With 18 months of Web design (HTML) experience, I've recently become interested in Cobol, but I'm not sure about its lifespan after the year 2000. Should I study Cobol to take advantage of current opportunities or direct my energies into Java?

I really prefer an intensive course rather than a longer college program, and I found out about a Cobol boot camp clear across the country in New York. How can I check it out, and what direction should I take? — DIRECTION DESIRED

Dear Direction:

The consensus from people such as Ken Kingery, vice president of Western area sales at CBT Systems U.S.A. Ltd. in Menlo Park, Calif., points to Java. Though Cobol will certainly continue as a programming language, Java looks like the winner over time. Because it was built from the ground up as an object-oriented language and is portable between platforms, it offers more career opportunities.

Kingery suggests checking out Sun Microsystems Inc.'s Java Web site (*www.javasoft.com*) and Scholars.com (*http://scholars.com/courses/default.asp*) for inexpensive, online course information, with experts available online 24 hours per day.

University extension programs, user groups and special interest groups are excellent places to seek out good local training resources. Terry Werner at the University of California at Los Angeles' Extension Computer and Information Systems Department says you might need two academic quarters to get the skills you need, but UCLA does offer a three-meeting year 2000 crash course that starts Jan. 30.

Because you're in Los Angeles, traveling to New York seems unnecessary. ▶

WORKSTYLES

High-tech companies are the most likely to recognize the importance of programs such as flextime and child care in attracting and retaining employees, according to a study released this month by a child-development and work/life agency. The study, by Bright Horizons Family Solutions and human resources consultancy William M. Mercer Inc., examined more than 100 work/life programs at 400 companies nationwide.

Survey author Dana Friedman said that among computer manufacturers responding, 41% said work/life initiatives were "very important" in maintaining a competitive advantage, as compared with just 2% to 23% of respondents at other types of companies. The number of tech respondents (17), wasn't statistically significant, but she expected larger samples would show similar results.

Here are some other excerpts from Friedman's interview with *Computerworld:*

Q. Why are work/life efforts important to high-tech companies' success?

A: Because of the demand for labor.

Q: Is this a recent development?

A: [More than] 20 years ago, in the mid-'70s, I found that the high-tech firms were in the forefront [of these trends], and that's because they were risk-takers and entrepreneurs. They didn't need research to [prove the need for work/life programs]. They were the first to have job-sharing teams in the early '80s. The culture supported that.

Q: Why are information technology people particularly responsive to this approach?

A: When you're working with scientific organizations, by and large the great idea is going to strike at 2 in the morning or 5 in the morning, and you don't typically work a 9-to-5 schedule. The need for flexibility and the need for people to carve out some time for themselves is going to look very different [to an IT company] than it will to a white-collar financial services firm.

It makes a whole lot of sense to me that the computer industry would be looking at this more closely than other industries.

– Anne McCrory

Luggage Losers

Airlines' lost luggage records

REPORTS PER 1,000 PASSENGERS	
BEST*	
America West	3.03
US Airways	3.08
Delta Air Lines	3.50
WORST*	
United Air Lines	6.35
Alaska Airlines	6.33
Northwest Airlines	4.66

* U.S. a[illegible]es with at least 1% of total [illegible]lic scheduled-service passenger r[illegible]

SOURCE: U.S. DEPARTMENT OF TRANSPORTATION, NOVEMBER 1998

More than Web-to-Host

If you have a mainframe, somewhere around 70% of your corporate data is on it. But if that data is not available to the users who need it, it's being wasted.

When is web-to-host not enough? When you can't access all of your hosts from all of your client platforms; when it's too slow; when you need to sacrifice important features in order to have it.

When is web-to-host more than web-to-host? When it's Winsurf Mainframe Access. WMA gives users concurrent browser-based access to all of your data, combining 3270 and 5250 access to IBM hosts with VT access to DEC and Unix hosts. WMA lets you control deployment, access and configuration rights throughout your network from a single central server. And you don't need to sacrifice full printing, HLLAPI support, or file transfer capability.

It's Your Future

Web-to-Host technology is exploding; projections* show it is the future for host access. WMA's technology is ahead of the pack, with ease of use, native support for 16- and 32-bit Windows clients as well as HTML-based support for Mac, OS/2 and other clients. In addition to TN3270 and TN5250, WMA supports native access to SNA server and Netware for SAA.

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** Source: International Data Corporation*

TECHNOLOGY

JAVABEANS AT WORK

A telecommunications company gambled on Enterprise JavaBeans to develop a critical customer service system. The application was up within a year, but the incomplete EJB spec meant lots of extra work for developers. ▸ **68**

INFORMIX SNEAK PEEK

A beta user says Informix's Visionary outguns Visual Basic at accessing complex data types. ▸ **68**

WEAK NT CLUSTERING

Delays in new clustering tools mean Windows NT will be limited to two-way clustering at least until the end of the year, analysts say.
For higher-level scalability and fault-tolerance, Unix still is the way to go — for now. ▸ **70**

OEMs, INTEL SPAR OVER SERVER BUS

Compaq, IBM and HP gang up to pitch Future I/O, an alternative to Intel's NGIO server-bus standard. ▸ **72**

FRANKLY SPEAKING

Hop on the "IT appliance" bandwagon, Frank Hayes urges. If you don't, users will smuggle in the cheap, nifty devices. Didn't the PC Era teach us anything? ▸ **74**

LOCK AND KEY

QuickStudy: 128-bit encryption keys are making it harder to break in to sensitive data over the Internet. Public-key infrastructures help ensure that those who deserve to get to that data can do so. ▸ **75**

ELECTRIC PAPER

From Xerox PARC comes a poster-board-thin digital display that runs off AA batteries. But displays based on the technology are a year (at the very least) from market. ▸ **81**

ELEGANCE REDUX

Power plus simplicity equals elegant code. We asked a panel what makes great programmers tick, what the rest of us could learn from them — and whether elegance really matters. ▸ **82**

THAT'S THE WAY IT WAS

Flashback: A Univac I helped newsman Walter Cronkite predict Eisenhower's 1952 landslide election victory. In an exclusive interview, Cronkite recalls that night. ▸ **86**

MORE

Exec Tech 84
Hardware.............. 72
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PETER SIBBALD

THE MUTUAL GROUP'S Tim Waldman uses Wall Data's Cyberprise, one of a growing number of products that enable users to make use of Web browsers to do their own mainframe querying

WEBIFYING THE MAINFRAME

WITH 70% OF ALL CORPORATE DATA still stored on mainframes, it seems everyone wants to give users and customers access to mainframes using the Web. How to make the link depends on everything from the skills of your staff to the fine print in your software licenses. In Field Report, we examine the tools and methods that five sites used to link their legacy systems to the Web.

76

EARLY ADOPTER PUTS EJBs TO TEST

Telecommunications company pleased with rollout; analyst advises caution

BY DAVID ORENSTEIN

Qwest Communications International Inc. took on a lot of risk and a lot of work when it decided to use a technology as young as Enterprise JavaBeans for a critical application.

But the risk was worth it. The Denver telecommunications company rolled out a new customer service system in less than a year.

The application, which supports hundreds of concurrent users, is one of the first major corporate projects to be based on the Enterprise JavaBeans (EJB) specification. Qwest's developers started coding in February 1998, a month before the specification was released.

The application provides much more comprehensive customer information than was previously available.

It tells field representatives, for instance, not only that a customer's long-distance use falls short of the contract minimum, but also that the customer has grown impatient waiting for a second line.

Rather than deploying heaps of code on hundreds of PCs, Qwest wanted a standards-based middle tier to house the bulk of the application logic, allowing the application to run on thin and fat clients. Qwest looked at other application servers, but chose EJBs as a more open standard, said David Sayre, director of sales force systems at Qwest.

Early last year, Qwest learned of EJBs from Web Logic, an application server vendor now owned by BEA Systems Inc. in San Jose, Calif., and began to work with EJBs even though Web Logic's server was months from commercial release, Sayre said.

The promise of EJBs is that they're platform-independent, distributed, reusable components that let developers assemble complex applications with relative ease.

But building the JavaBeans can be hard work. Qwest coded 37, ranging in size from hundreds to thousands of lines.

Mike Gilpin, an analyst at Giga Information Group Inc. in Norwell, Mass., said that there's no way to use automated tools to develop EJBs and that there are few usable third-party EJBs because they must be highly customized to each user or industry.

EJBs also can hog bandwidth by calling back to remote databases to look up data, said Jeff Gallimore, lead technology consultant at Tysons Corner, Va.-based Perspective Technology Corp., a consultancy that aided Qwest.

The development team built a smart proxying system in which data that's unlikely to change is cached on the client to reduce remote calls back to the EJBs on the server.

Another problem was managing the persistence of EJBs, especially complicated JavaBeans that query multiple databases. Rather than rely on the "container" provided by the application server, developers had to write SQL code that specified how and when the EJB will persist.

"This technique is usually required when you have a bean with complex business logic or [that] is pulling data from or storing data to multiple database tables," Gallimore said. When the container manages the persistence — that is, keeps track of the status of elements within the application — the developer merely has to map the bean to the database, and the application server handles the specifics, he said.

Though Qwest is pleased with EJBs, Gilpin said he is more cautious. "I advise my clients . . . to experiment with the technology now," he said. "Don't do anything that is extremely critical." ▶

Qwest's Enterprise JavaBeans Odyssey

February 1998	Qwest learns of Enterprise JavaBeans, begins work on application.
March 1998	Sun Microsystems releases EJB specification.
June/July 1998	Web Logic releases EJB application server.
Oct./Nov. 1998	BEA Systems buys Web Logic.
December 1998	Qwest rolls out its EJB application.

Nontech Users Get Graphical Analysis Help

Informix development tool allows access to complex visual data

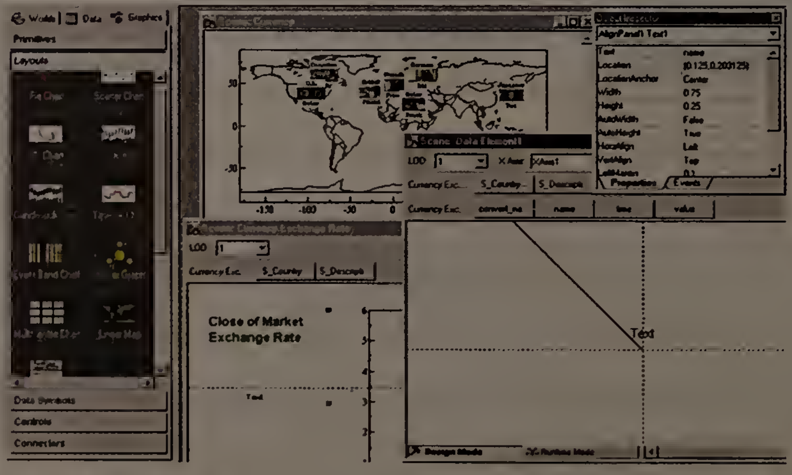
BY STEWART DECK

Two months ago, Louisiana-Pacific Corp.'s Jason Shank was running out of patience.

The information technology business analyst had been trying for six months to develop a system that would let executives at the Portland, Ore., forest products company dip into its database and present graphical data about safety, logistics and sales topics.

But Shank was spinning his wheels trying to build such a system with Microsoft Corp.'s Visual Basic.

"We were having trouble connecting the data collection and the presentation pieces," Shank said. "We needed a system that would give our executives data in a very visual form, not just rows and columns, and we wanted it to be updated automatically when the [underlying] database was updated."



AlignPanel1 Text1

Text name
Location (0.125,0.200125)
LocationAnchor Center
Width 0.75
Height 0.25
AutoWidth False
AutoHeight True
HorzAlign Left
VertAlign Top

Close of Market
Exchange Rate

LOUISIANA PACIFIC became an early beta tester of Visionary after attempts to present graphical data using Visual Basic were unsuccessful

Because Louisiana-Pacific was running an Informix Corp. database, Shank asked the Menlo Park, Calif.-based company for assistance. It became one of the early beta testers of Informix Visionary.

Two-Part System

Visionary has two parts: a rapid-development environment called Studio, and a viewer that lets users publish and view data graphically. Developers can design different graphical views of the data, called scenes, and then let users navigate among them.

Using Visionary, Louisiana-Pacific was able to build a test system in less than a month that shows each of its 100 or so U.S. plants on a map and lets users drill down into highlighted trouble spots. Live data on sales, order fulfillment, on-time shipping percentages, safety and environmental issues are fed into the system for each plant from an Informix database.

"It will allow us to generate reports a lot more easily, and it frees up a lot of [IT] staff to work on more important projects," Shank said. Louisiana-Pacific's system is scheduled to go live this spring and will accommodate about 150 users.

Analysts said Visionary is noteworthy because of its ability to access rich and complex data types that are stored in a database. That lets users include nonstandard data forms, such as sounds and video clips, in their reports.

"People have stored that kind of rich data in databases, but they haven't had an easy way to access it and take advantage of these types of object features in the databases," said Mitch Kramer, an analyst at Patricia Seybold Group in Boston.

"This certainly makes database content, especially complex types, accessible and understandable to more people in an organization," said Carl Olofson, an analyst at International Data Corp., a research firm in Framingham, Mass.

But Olofson said the current version of Visionary isn't as useful as it could be. "It really needs to become more of a Web-based thin-client configuration, and it really should leverage the capabilities of the Informix Dynamic Server better," he said.

Shank agreed a thin-client version would be an improvement but said it isn't a big issue for him. He added that the current version's Weblike navigation and other functions give him what's needed to solve his database-access dilemma. ▶

JUST THE FACTS

Informix Visionary

- **Available:** Now
- **Pricing:** Starts at $500 per user. Also available in a package with Informix Dynamic Server database, training and consulting for $37,000. Developer package starts at $16,200.

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Informatica Upgrades Data Mart Tools

PowerMart 4.5 and PowerCenter 1.5 boost mainframe support, meta-data capabilities

BY STEWART DECK

Informatica Corp. recently released the latest versions of its data mart deployment tools and its data integration hub, with new features designed to make both more appealing to large corporate enterprises.

PowerMart 4.5 is the Palo Alto, Calif.-based company's tool suite for designing and deploying data marts. Once one or several data marts are up and running, the PowerCenter 1.5 data integration hub helps tie them together and transform legacy, relational and enterprise resource planning data so that it can be analyzed for decision support.

Together, the two tools will include increased mainframe support, enterprise analytic applications support, metadata enhancements, new parallel engine capabilities and new aggregation-handling capabilities for managing larger data stores.

Stanford University in Palo Alto uses PowerMart to consolidate all of its corporate financial, student and production data from 15 legacy systems. The university has been testing the latest edition. "We particularly like the new lockdown security features that let several groups work on the same repository without overwriting someone else's work," said Patrick Nolan, an MIS engineering manager at Stanford. "We have been able to standardize the way we do [data] processing throughout the system, and our productivity has gone way up."

Sapient Corp., a Cambridge, Mass.-based software company, has built its decision-support data mart on PowerMart. Ivor Fergus, the architect of Sapient's mart, said the new scalability capabilities were "critical" to his company as it expands its small data mart into a more encompassing storehouse of financial data.

Fergus said that he still would like to see more attention paid to how to best perform data consolidation in a distributed environment. "This still seems to missing in these latest versions," he said.

Pricing starts at $85,000 for PowerMart 4.5 and at $225,000 for PowerCenter 1.5. ◗

Power Play

New features for PowerMart and PowerCenter include:

- Better mainframe support
- Meta-data enhancements
- Development tools for repositories and servers
- Scalability enhancements

NT CLUSTERING REMAINS WEAK

Two servers is the limit, at least through the end of the year

BY JAIKUMAR VIJAYAN

HIGH-END clustering will remain a weak point for Windows NT, at least until the release of Windows 2000, according to analysts.

With the delay in the release of Phase 2 of Microsoft Corp.'s clustering software — which had been expected last fall — the company's Windows NT clustering technology is limited to basic, two-way high availability.

For now, customers who need high-end fault tolerance and scalability should look at high-end Unix vendors such as Compaq Computer Corp. — through its Tandem unit — IBM and NCR Corp., analysts said. That's because it takes a lot more technology and multivendor support to provide those capabilities compared with the basic server back-up and recovery features available on most NT clustering products today, analysts said.

A server cluster is a group of independent servers (nodes) tied together and managed as a single system for higher reliability, performance and scalability. The current version of the Microsoft Cluster Server (MSCS) software — formerly known as Wolfpack — allows users to tie together two NT servers so that if one server fails, the other can take over. MSCS-compatible software and minor variations of the technology are widely available from vendors that include Hewlett-Packard Co., Compaq and Dell Computer Corp.

Current NT high-availability products are good enough for most applications in which NT is used, especially when combined with technologies and services such as those from NSI Software Inc.'s multinode fail-over technology, Data General Corp.'s ready-to-go cluster software or HP's 99.9% availability guarantees, analysts said.

But the capabilities fall significantly short of the Unix space when it comes to running and managing very large applications on a battery of clustered servers or having multiple servers in a cluster go down without losing the application, said Tony Iams, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y.

"Obviously, fault-tolerance is key where 100% availability is a requirement," said Glenn Sandusky, CIO at Aon Services Group, a brokerage and subsidiary of the $5.8 billion Aon Group in Chicago. The company's file- and print-sharing environment runs predominantly on Novell Inc.'s NetWare, though its database and application environment runs on Unix and, increasingly, NT.

To become a more capable clustering environment, Iams said, NT needs capabilities such as support for up to 30G bytes of memory and more server nodes.

Independent software and database vendors also need to make their software cluster "aware" and provide middleware for managing the cluster. And hardware vendors need to provide the so-called interconnect technologies used to physically link the servers.

According to Microsoft product manager Kiran Khanna, Phase 2 of Microsoft's clustering technology won't be available at least until the release of Windows 2000, now expected toward the end of this year. Phase 2 will support up to 16-node fail-over and provide easier installation and setup, he said.

A future version of the software will let users run an application across the 16 nodes as if it were running on a single server, he said. ◗

NT Challenges

Technical challenges on the road to bolstering Windows NT clustering performance:

Concurrent operations on multiple servers: Windows NT vendors must find a way to have all servers in a cluster working on the same data at the same time

Failure isolation: Vendors must prevent failures on one server in a cluster from triggering failures on other servers in the cluster

Management: Users need to manage multiple servers in a cluster as one large server

SOURCE: ILLUMINATA INC., NASHUA, N.H.

BRIEFS

Siemens Smart-Card Operating System

Hoping to speed adoption of smart cards, Munich-based Siemens AG said it's developing a uniform operating system for its own cards and those from other manufacturers.

Most smart-card operating systems are proprietary, although Microsoft Corp. also is developing a universal product.

The Siemens offering is set to ship in the third quarter. – IDG News Service

www.siemens.de

Monitoring Domino

BMC Software Inc. last week unveiled its management suite for Lotus Development Corp.'s Lotus Domino on Microsoft Corp.'s Windows NT.

The Houston company said the suite integrates event detection, diagnosis and correction capabilities with reporting, "what-if" modeling and analysis.

The suite costs $1,200.

www.bmc.com

Veritas Backup

Veritas Software Corp. is now shipping Global Data Manager for NetBackup, software for centralized management of backup and recovery across distributed locations. The Mountain View, Calif., company said the software lets information technology departments manage multiple master servers that run NetBackup, Veritas' backup software, from one console.

The price is $5,000 for the console, $3,600 per master server running Unix and $1,800 for each master server that runs Windows NT.

www.veritas.com

Digging Into Data

Quadstone Ltd. recently released Decisionhouse for Windows NT, an application for behavioral analysis of customer databases.

According to the Boston company, the software was designed to help marketers in the banking, insurance and retail industries better understand issues such as customer response, customer retention and credit scoring.

Pricing for Decisionhouse begins at $50,000.

www.quadstone.com

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DIRECTIONS 99

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AGENDA

9–12:00 MORNING SESSION

- **Introduction and Welcome** *Vicki J. Brown — Senior Vice President, Worldwide Operations and Marketing*
- **Economies in a Tailspin...Will IT Land Upright?** *Philippe de Marcillac — Senior Vice President, Global Research*
- **Survival Tactics for The New Internet Economy** *Frank Gens — Senior Vice President, Internet Research*
- **Can Today's IT Leaders Compete in the New Internet Economy?** *David P. Vellante — Senior Vice President, Systems, Software, Storage, Semiconductor, Channels, and User Research*
- **Viable and Dying Technologies for the New Economy** *John Gantz — Senior Vice President, Personal Systems, Services, and Collaborative Research*

Session A 1:05-1:45	Session B 1:55-2:35	Session C 2:45-3:25	Session D 3:35-4:10
Track 1: Internet Commerce: Driving the New Economy			
What's the ROI for Internet Commerce? Michael Sullivan-Trainor	**The Boom in Business-to-Business Commerce** Joan-Carol Brigham	**Targeting the Consumer Commerce Site** Barry Parr	**Project Atlas: Commerce Around the World** Jill Frankle
Track 2: Devices for the New Economy			
The Old Guard: PCs Bruce Stephen	**The Next Generation: Consumer Devices** Kevin Hause	**The Digital Glue of Pervasive Computing** Sean Kaldor	**Channels for the Millenium** Tony Amico
Track 3: Systems and Servers in the New Economy			
Server Workloads: Understanding Server Deployment Susan Frankle	**What's Wrong with IBM?** Jay Bretzmann	**Winning Server and Storage Strategies—It's All About Channels** Janet Waxman	**How the Lunatic Fringe Has Become Mainstream Computing** Debra Goldfarb
Track 4: Servicing the New Economy			
Opportunity In The Interactive Enterprise: Moving Beyond eCommerce Traci Gere	**The Business Solutions Challenge: Getting Used to the New Rules** Susan Siew-Joo Tan	**"Smart" Services: Embedding Intelligence in the Support Process** Chris Hoffman	**Stopping the 21st Century Hacker: Security Services in the New Economy** Rich Brewer
Track 5: Software Engines for the New Economy			
The Networked Enterprise: Turning Applications Inside Out Clare Gillan	**Programming E-Business** Steve Hendrick	**Will We See Self-Managed Systems?** Paul Mason	**Is Microsoft's Strategy for NT in the Enterprise the Same As Yours?** Dan Kusnetzky
Track 6: Building the New Economy			
Preparing for the Quantum Leap in Bandwidth Gigi Wang/Rick Villars	**Providing Bandwidth for the Next-Generation Internet** Lee Doyle	**The Enterprise Network in the Internet Age** Mark Leary	**IP Communications: Driving Convergence but Serving Legacy** Mark Winther

4:15–5:00 Closing Session

- **Next Generation Internets** *Dr. Robert M. Metcalfe — Vice President, Technology, IDG*

VENDORS RALLY FOR BUS STANDARD

HP, Compaq, IBM seek alternative server architecture to Intel's

BY APRIL JACOBS

Three top server makers — Compaq Computer Corp., IBM and Hewlett-Packard Co. — are moving forward with plans to develop a new peripheral bus standard, dubbed Future I/O, as an alternative to Intel Corp.'s NGIO standard.

The three are scheduled to issue a formal rallying cry to other server vendors at a Feb. 12 forum in Monterey, Calif. There they will release more technical details on the standard and solicit input from potential hardware developers, according to Karl Walker, a Compaq spokesman.

Though technical details for both standards are still sketchy, there have been sticking points among the companies over what customers and computer and peripheral makers need. Intel's Next Generation I/O (NGIO) standard should result in marketable products in 2002, and Future I/O-based servers would be ready by 2001, officials from both camps said.

Intel's NGIO would operate at about 2.5G bit/sec. Future I/O's potential data transfer speed hasn't been announced, but Walker said it would be "significantly faster" than PCI-X's 1G byte/sec. PCI-X is an interim standard in the works to succeed the current 133M byte/sec. Peripheral Component Interconnect (PCI) bus.

Products based on the PCI-X specification should be available by year's end and would speed server performance while Future I/O and NGIO are being finalized.

Backers of the proposed standards also have argued about whether royalties should be charged to vendors that base products on the new standard. Intel has made the case for no royalties, but Walker said royalties would result in better products because vendors that contribute technology would receive royalties.

Intel officials declined comment on the Future I/O proposal until they see details. But they have said NGIO will win the same acceptance as Intel's PCI standard and will be more readily adopted because it's royalty-free.

Analysts in the past several weeks have said the server vendors have a good chance of winning support for their standard, given their experience in responding directly to users' needs.

Unlike Intel, which made its mark with PCI on the desktop, the next generation of bus architecture must alleviate potential bottlenecks on servers as Intel's Pentium family of processors support more critical business applications.

"HP, Compaq and IBM are on the front lines," said Amir Ahari, an analyst at Framingham, Mass.-based International Data Corp. He said the vendors have more experience than Intel in building high-performance servers and thus stand a better chance of developing a superior server bus. "They have to listen to customers when they complain that application performance isn't good enough." ◗

JUST THE FACTS

PCI's Successor

Next Generation I/O
From: Intel
Royalty: Free
Availability: Ready by year's end

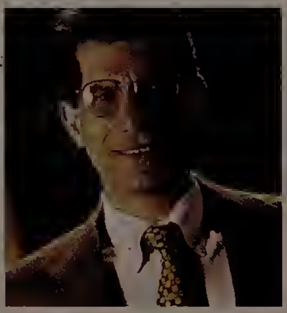
Future I/O
From: Compaq, IBM and HP
Royalty: A "reasonable" fee
Availability: Ready by late 2001

SCALAR AIT 1000

Advanced Digital Information Corp. offers three versions of its Scalar AIT series of tape-storage libraries: the 220, 480 and 1000 (shown). According to the Redmond, Wash., company, the libraries are based on Sony Corp.'s 8mm tape format, called advanced intelligent tape (AIT). Capacity ranges from 1.4T bytes in the Scalar 220 to more than 80T bytes in the Scalar 1000. Pricing starts at $14,400.
(800) 504-2803
www.adic.com

Apple Snaps Back With Power Mac G3

Latest desktop drops old features in drive to lead new technology



The whole point of the new Power Mac G3 is that it was developed for content-creation customers.

JON RUBINSTEIN, VICE PRESIDENT OF HARDWARE DESIGN

New portables and consumer Macintoshes (the sherbet-colored iMacs) issued last year by Apple Computer Inc. were the first steps in the firm's attempt to reassert itself as a leader in PC innovation. Recently, Apple unveiled the last piece of its redesigned Macintosh product family: the Power Mac G3 desktops used by creative services departments, service bureaus and independent content creators [CW, Jan. 18].

The revamping of Apple's systems was the responsibility of **Jon Rubinstein**, vice president of hardware design. Rubinstein joined Apple two years ago as the company was undergoing a major management schism under then-CEO Gil Amelio and was watching its licensed clone vendors take away customers for its highest-margin systems. Rubinstein had worked at Next Inc. under Steve Jobs, now Apple's interim CEO, and also had been a vice president at FirePower Systems Inc., whose mission was to design PowerPC processor-based systems that would run both the Macintosh operating system and Windows NT.

Computerworld West Coast bureau chief Galen Gruman recently talked with Rubinstein.

Q: *Why should enterprise users care about the G3?*
A: It's the fastest PC in the industry, but it's more than megahertz. The whole point of the new Power Mac G3 is that it was developed for content-creation customers; they are typically in the enterprise environment. It's designed for accessibility — there's a handle so it can be moved around. There's the door [in the case]: Our publishing customers are very into getting into their machines [to configure and upgrade them].

Q: *You dropped SCSI in favor of FireWire (a bus that had been used only by digital camera makers). That makes the essential drives and scanners of today incompatible. Why not have both?*
A: *We're trying to aggressively drive forward new technology. And to do that, you have to leave the old technology behind. If you need SCSI, we'll sell you a card for $49.*

Q: *PC makers give their users old and new technology at the same time to ease the transition. Why not Apple?*
A: That's why they can't lead in innovation. We're willing to make these kind of steps. I'd like to have no slots. Why do you need slots? [But getting rid of them takes] a longer time. The devices should have their own processing, and they should use FireWire to communicate with the system. ◗

Sprint Signs $10M Net Pact

BullSoft OpenMaster software to help manage Integrated On-Demand Network

BY MATT HAMBLEN

Sprint Corp. recently announced a $10 million, three-year services contract with BullSoft to deploy BullSoft's OpenMaster network and systems monitoring software to help manage components of Sprint's Integrated On-Demand Network (ION).

ION is an ambitious service to let customers bring together different network services onto one Asynchronous Transfer Mode backbone.

The deal, announced Jan. 11, highlights a little-known network management product of which network managers should be aware, analysts said. It also raises the U.S. profile of the division of France-based Groupe Bull.

By using Billerica, Mass.-based BullSoft's OpenMaster for Telecom software, Sprint will be able to manage a nonproprietary network that is optical and electrical rather than digital, said Don Lewis, director of broadband operating systems development at Sprint in Kansas City, Mo.

Such a network should cost about one-third the price of a more common but proprietary Time Division Multiplexing system, said Lewis, who declined to put a dollar amount on the savings.

OpenMaster network management pricing starts at $10,000 for five network manager seats.

In the enterprise management market, OpenMaster competes with products from IBM and its Tivoli Systems Inc. subsidiary, as well as with products from Computer Associates International Inc.

In the telecommunications market, it competes against products from Sun Microsystems Inc. and Hewlett-Packard Co., analysts said.

"If you are looking for policy-based management tools, look at Tivoli. But if you want more sophisticated tools [that] you can put together, look at Bull or CA. But Bull supports more standard interfaces than anybody," said Richard L. Ptak, an analyst at Hurwitz Group Inc. in Framingham, Mass.

Worldwide, Bull has about 1,500 customers who use OpenMaster software, with the largest group among telecommunications companies.

Its users include Deutsch Telekom AG and France Telecom SA, Lewis said.

Graybar Electric Co. in St. Louis was an early OpenMaster customer. The electrical parts wholesaler installed the software in 1994 to help monitor 6,000 routers and other devices in a frame-relay network used to trace millions of pieces of inventory, said Ted Hoffman, information systems director at Graybar. ◗

AT A GLANCE

Bull and BullSoft

Based: Bull, based in France; BullSoft, based in Billerica, Mass.

Offices: In 85 countries

Employees: 21,000

1997 revenue: $4.2B

SIMULATION SOFTWARE FORECASTS DATA FLOW

Network problems can be avoided by pretesting changes' impact

BY BOB WALLACE

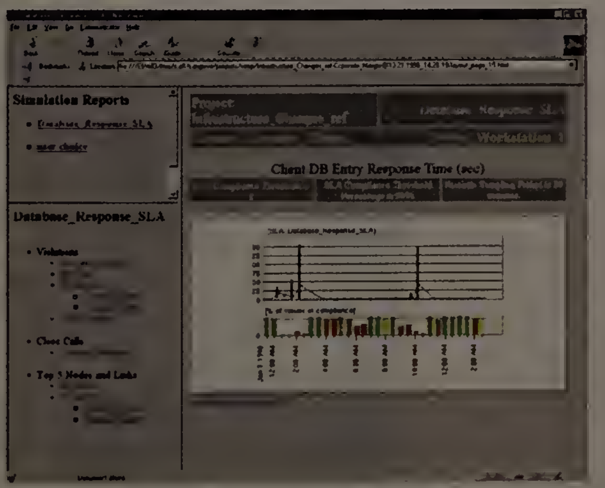
Hewlett-Packard Co. and MIL-3 Inc. have announced jointly developed software to allow network managers to simulate the effects of adding new applications, users and technologies to their data networks.

Analysts said the products outgun those by competitors in showing actual network traffic flows rather than mock-ups. But simulating the impact of specific applications, such as SAP AG's R/3, requires expensive add-on modules.

With simulation, network managers can make sure they have the bandwidth and network design to support changes and avoid performance drops and network failures. They can also determine which service-level agreements (SLA) they can fulfill.

HP is marketing the software as OpenView Service Simulator 6.0, and Washington-based MIL-3 is selling it as IT DecisionGuru 6.0. It runs on Windows NT and Unix workstations and is shipping now. Pricing starts at $19,000.

"The idea is to ensure that applications get the network performance they need and that network managers can meet SLAs on Day 1 of deployment," said Mark Bouchard, an analyst at Meta Group Inc., a Stamford, Conn., consulting and research firm.



HEWLETT-PACKARD'S OpenView Service 6.0 was designed to simulate the effect of change on nets

The HP offering pulls data necessary for creating network topology maps from the vendor's OpenView Network Node Manager. It then adds traffic flows captured by its NetMetrix network monitoring system's remote monitoring probes, located throughout the network, to show managers the extent to which their networks are loaded.

MIL-3's version requires network managers to create topology maps manually — but lets information technology workers perform basic simulations without buying HP's Network Node Manager and NetMetrix.

When integrated with NetMetrix, the software shows a view of actual network traffic flows rather than simulated traffic, a capability not offered by competitors such as CACI, Make Systems Inc. and Optimal Networks Corp., Bouchard said. That feature makes simulations more accurate. Once the topology and network flows are displayed, network managers can conduct "what-if" simulations to see how their network will react to changes.

With the HP/MIL-3 package, network managers can simulate addition of users and of new technologies such as Asynchronous Transfer Mode, Fast Ethernet and Gigabit Ethernet. But to simulate the effects of specific applications such as SAP AG's R/3, add-on modules are, again, required. MIL-3's SAP R/3 module costs $18,000.

The MIL-3 tool is critical at SBC Technology Resources in Austin, Texas, said Scott Toborg, a senior technical staff member at the telephone company subsidiary. "You can do very quick and effective analysis of network performance and can find out the impact of adding new applications to your network infrastructure," Toborg said. ◗

BRIEFS

WAN Leaders

ATM WAN equipment vendors and percentage of sales in third quarter of 1998

VENDOR	SALES
Cisco Systems	24.8%
Newbridge Communications	20.6%
Ascend Communications	18.2%
Nortel	15.8%

Total market, Q3 1998: $690M

SOURCE: CAHNERS IN-STAT GROUP, NEWTON, MASS.

Fax Router

Smith Micro Software Inc.'s HotFaxShare 4.1 is server-based software that routes faxes to recipient desktops and includes an IP gateway.

According to the Aliso Viejo, Calif., company, the software's new IP Gateway module connects multiple HotFaxShare servers over the Internet or IP wide-area networks. Pricing starts at $495.

www.smithmicro.com

Apple Options

Miramar Systems Inc.'s PC MacLAN for Windows NT 4.1 integrates Macintosh and Windows NT file and print sharing.

According to the Santa Barbara, Calif., company, the software allows Windows NT users to print to networked AppleTalk printers.

NT users can use Windows' Network Neighborhood to view Apple Computer Inc. Macintosh systems, and Macintosh users can mount NT drives or file servers using Macintosh's Chooser option.

PC MacLAN for Windows NT 4.1 costs $249.

www.miramarsys.com

Fast Switches

The Netgear division of Northern Telecom Limited last week released two Fast Ethernet switches that were designed for small offices or departments.

According to the Ontario-based company, Netgear FS308 is an eight-port switch with an internal power supply that offers 10/100M bit/sec. connectivity.

The FS308 costs $599, and the FS108 costs $499.

www.nortelnetworks.com

BRIEFS

Lotusphere Notes

Among dozens of announcements made last week at Lotusphere in Orlando, Fla., were the following:

- Relavis Corp. (formerly MFJ International Inc.) previewed Version 5.0 of its Notes-based OverQuota sales automation product. The release will incorporate customer relationship management functions, including Sametime instant messaging, which lets users locate and ask questions of experts at a company. The product will ship in the third quarter.
www.relavis.com
- Trend Micro Inc. announced an upgraded version of ScanMail, its Notes virus protection software. Trend Micro officials said ScanMail 2.0 features more speed, encrypted-file scanning and new reporting features. A Windows NT version of the product will ship this quarter. Pricing will start at $1,150 for 25 users.
www.antivirus.com
- Biscom released Faxcom 2.5 for Notes. The product provides fax capabilities for Notes 5.0 users. Pricing ranges from $25 to $55 per seat. Faxcom 2.5 will ship in February.
www.biscom.com
- Stampede Technologies Inc. demonstrated its TurboGold server-to-server accelerator. TurboGold speeds the replication of Lotus Notes databases between Domino servers by compressing and streaming the data. The product will ship in the second quarter. Pricing information wasn't available.
www.stampede.com

Who's Buying What

LIZ CLAIBORNE INC., a New York-based designer, has installed a warehouse management system at its North Bergen, N.J., distribution center. The system is from Waukesha, Wis.-based **MCHUGH SOFTWARE INTERNATIONAL INC.**

EGGHEAD.COM INC. has chosen **SUN MICROSYSTEMS INC.**'s software and systems as the corporate standard for its online and business operations. The Vancouver, Wash.-based retailer has installed several Sun Enterprise servers, Sun StorEdge disk arrays and Solaris operating environment. Egghead used Sun Professional services to assist with the implementation.

Nth Degree

In a recent study of Fortune 1,000 companies, more than two-thirds of respondents said they have a formal system architecture. N-tier client/server is the dominant choice for 54.3% of those respondents. Two-tier client/server is the choice of 25.7%; single-tier mainframe or mini is favored by 14.3%. Only 2.9% chose a Web-centric architecture. The study was conducted by Arlington, Mass.-based Cutter Consortium.

Auxilium Focuses On Auto Industry

Auxilium Inc. a developer of application integration software in Mendota Heights, Minn., last week said it is creating a business unit that will focus on auto manufacturers and first-tier suppliers of automotive systems and components. Auxilium also is setting up a demonstration facility in Pontiac, Mich., that will let auto industry users simulate installations of different manufacturing software packages.

Sequencia Embeds SQL

Phoenix-based Sequencia Corp. said it will embed Microsoft Corp.'s SQL Server 7.0 database in its applications for process manufacturers. The combination is due by midyear, as is a companion product that ties plant-floor systems to corporate applications.

FRANKLY SPEAKING

Simple, cheap and quick

SIMPLE, CHEAP AND QUICK. Don't you sometimes wish there were IT solutions like that? Quick-hit stuff that goes up fast, does its job with a minimum of babysitting and keeps costs low — or at least under control. I thought about that last week in San Diego, watching the parade of clever new technology products at David Coursey's Showcase '99 conference. Of course, these weren't the kind of big, complicated, industrial-strength items IT people in big organizations would care about. They were simple, cheap and quick.

There was a small, easy-to-use Internet server from a company called Cobalt Networks (*www.cobaltnet.com*) that cost about $1,000. And a small, easy-to-use telephone-switch-plus-phone-mail system from Bizfon (*www.bizfon.com*) that cost about $1,000. And another small, easy prototype net server that SCO (*www.sco.com*) plans to license to other vendors for products that will cost — what else? — about $1,000.

No, we wouldn't be interested in products like that, would we? They're designed for small businesses, not big important outfits like ours.

> *IT must accept that the day of the 100% solution is over.*

Which won't stop departments and branch offices from smuggling these products in, behind our backs, as soon as they're available. They did it with minicomputers, and PCs and PalmPilots. They'll do it again with these "IT appliances." And eventually they'll scream for help when something goes wrong — and we'll scratch our heads, trying to dope out what these funny little boxes are supposed to do and how to make them work.

And there's nothing we can do to stop that cycle of smuggle, scream and scratch. Well, OK, there is one thing: We could actually put IT appliances on the menu of choices we offer our users.

Sound crazy? It shouldn't. The days of building 100% solutions are over. For lots of users, an appliance that delivers 90% of what they need right now will always beat a better system that won't arrive for six months.

For many IT people, that's hard to take. Throwing in a quick, cheap fix without gathering requirements and designing and implementing a proper solution is, well, not the way we do IT.

But that's got to change. And if we add that simple, cheap, quick fix to the options we offer users, we can get the best of both worlds.

If users choose a quick-fix appliance, they know they won't get their wish list of features. They'll get it cheap, they'll get it now — but they'll have to work around the shortcomings themselves.

Meanwhile, IT still installs, monitors and maintains the appliance, so we're not blindsided by a smuggled system that has become business critical. IT also gets credit for delivering a solution so cheap it's almost impossible not to earn back a nice return on investment. How crazy is that?

True, there's a downside to offering users IT appliances. You've got to keep track of low-end IT products in order to watch for which ones might be useful. You've got to give up some control-freak perfectionism, and shed some not-invented-here attitudes.

But maybe, just maybe, they'll let you get a few more projects off your plate and satisfy users at the same time — simple, cheap and quick. ▶

FRANK HAYES, *Computerworld's staff columnist, has covered computing for 20 years. His Internet address is frank_hayes@computerworld.com.*

How Encryption Works

JOHN BAXTER

1.) A user creates an E-mail message.

2.) Before sending the E-mail, the user locks, or encrypts, the E-mail with the intended receiver's public digital key. The key may be obtained from the receiver or a public-key server within the company network or on one of many sites on the Internet. The act of encrypting the message is done via a third-party encryption package, such as Pretty Good Privacy, and often is integrated with some vendors' E-mail systems to make the process smoother.

3.) The E-mail is sent across the Internet. Any attempt to read its contents without the intended receiver's digital key will be resisted.

4.) Receiver uses his private key to decrypt the message and read it. Private keys are kept either in the E-mail package or in a third-party encryption package that works with the E-mail software.

Encryption

DEFINITION

Encryption is a method to make E-mail messages, data files and electronic-commerce transactions secure. Encoded blocks of data, called keys, are used to lock the message from outside view when it's traveling across the Internet. When it gets to the recipient, that recipient also must use a special key that can unlock the message. Previously, the U.S government used a 56-bit block of data for its encryption standard, but because computers are getting so much faster and better at breaking codes, 128-bit blocks of data now are being used as the new standard.

BY TIM OUELLETTE

Encryption has been around since ancient Egyptians carved secret, coded hieroglyphics on tomb walls and stone tablets.

Today, the need to send private information has created a whole new way to secure – and break in to – corporate information.

"Internet communications and connectivity, especially between companies and their business partners and employees, is driving the need for encryption," says Ed Shapland, senior manager at Ernst & Young LLP's Consulting Group in Washington.

Although E-mail is one area that needs to be secure, online services such as Internet stock trading and online banking need encryption to survive on the Internet.

Computer encryption uses digital keys, which are encoded bits of data, to lock and unlock an E-mail message, file or Internet-commerce transaction.

Decryption Needed

These keys must be decrypted by the receiving computer before an E-mail message or file can be read.

Although digital keys with 56 encoded bits have sufficed since the 1970s (see chart), the focus today is on 128-bit keys. The larger keys are more complex, which makes it much harder for a typical computer hacker to break.

Even more important to the success of computer encryption is the way these secret keys are handled.

Previously, both the sender and receiver of an encoded message had the same digital key.

That meant telling the recipient of the message the exact code to the key, either through direct contact or in some, often unsecured method such as the telephone.

Today, encryption uses public keys. In this scheme, a person has a public key that he gives out to anyone. People use the public key to encrypt messages to that person.

The person then has a secret, or private, key that only he can use to open messages encrypted with his public key.

Find the Right Key

But with so many people using the Internet, people need to know how to gain access to public keys.

"It used to be difficult to find a person's public key," says David Remnitz, CEO of IFsec, a security consulting firm in New York.

Today, companies build public-key infrastructures, which have certifying authorities — basically a Department of Motor Vehicles for encryption, Remnitz notes.

These certifying authorities maintain a list of users and their public keys.

One catch with 128-bit encryption is that the U.S. government forbids export of U.S. 128-bit encryption products overseas because of national security.

That limits the way global companies can encrypt communications with their overseas offices, though 56-bit products were allowed last September. ▶

Ouellette is a freelance writer in Scarborough, Maine.

MOREONLINE

For more information and resources on encryption, see our Web site.
www.computerworld.com/more

Encryption Sampler

A sample of popular types of digital encryption:

Data Encryption Standard (DES): Current federal encryption standard that uses a 56-bit secret key for each 64-bit block of data. Both sender and receiver must know and use the same private key to encrypt and read messages or files.

Triple DES: Encrypting a DES message three times to make it that much harder to break the code.

Advanced Encryption Standard (AES): New federal standard to replace DES. It will support 128-bit blocks of plain text. Until it's officially decided, Triple DES will act as the new standard.

Pretty Good Privacy (PGP): Software encryption product that conforms to the DES algorithm but uses 128-bit encryption.

It also uses two keys – one public and one secret – as opposed to DES' single key. It's the de facto standard for Internet E-mail encryption.

Going By the Numbers

0: Number of 56-bit data encryption packages allowed to be sold overseas before September 1998. If they were sold overseas, other governments could crack the 56-bit code, making top U.S. communications vulnerable to attack.

56: Number of bits in a DES key.

1977: The year IBM developed DES; U.S. government approves use of DES to encrypt its important messages.

$10,000: The top reward offered by RSA Data Security Inc., developer of a different encryption scheme. RSA offers a series of contests challenging users to break the DES code.

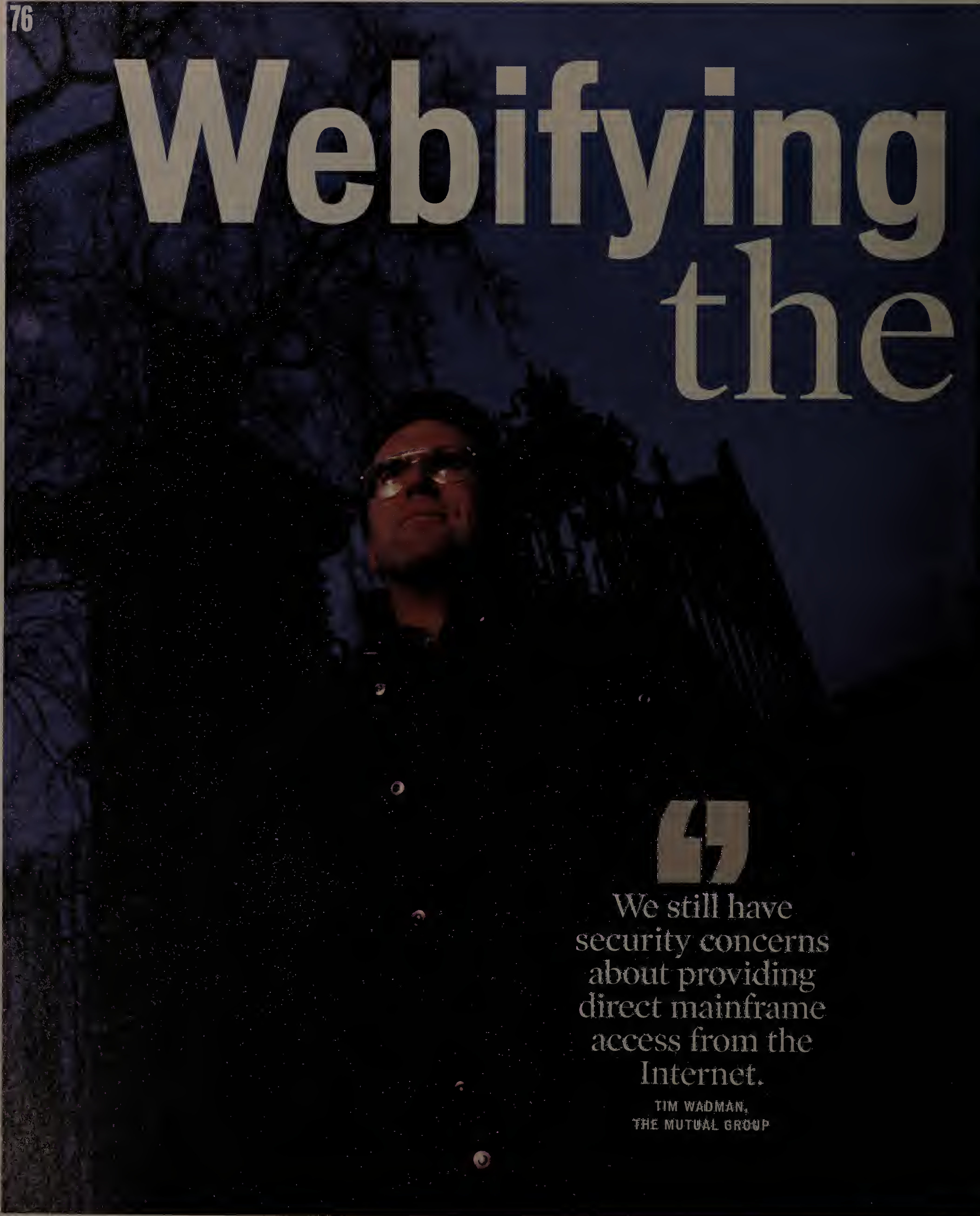
14,000: Number of computer users on the Internet who took part in the effort, breaking the code by running through 18 quadrillion keys.

72 quadrillion: Number of possible keys to encrypt messages or read messages allowed by 56-bit DES.

SOURCE RSA LABORATORIES
SAN MATEO, CALIF

■ *Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@cw.com.*

Webifying the



> We still have security concerns about providing direct mainframe access from the Internet.
>
> TIM WADMAN, THE MUTUAL GROUP

PETER SIBBALD

Mainframe

BY ELISABETH HORWITT

WEBIFYING THE mainframe may seem like a contradiction in terms — old technology in a new age. But to a growing number of companies, legacy hosts and Web front ends are turning out to be a hot combo.

Take The Mutual Group. Prior to installing Wall Data Inc.'s Cyberprise Web Host and Server, "We actually tried to keep down the number of customers who accessed our mainframe because of the headaches involved in giving all of them an emulator, installing it, configuring it and supporting it," says Tim Wadman, technology solutions consultant at the Canadian insurance company.

Cyberprise is one of a growing bevy of products that enables users to make use of Web browsers — "which everybody already has anyway," Wadman points out — to do their own mainframe querying with software they download from a Web server.

Such products are in demand. A recent report by International Data Corp. in Framingham, Mass., found that the worldwide market for Web-to-host browser license shipments is exploding: from 67,000 desktop licenses in 1996 to an estimated 17 million in 2002.

That shouldn't be surprising. More than 70% of corporate data in the world is still on mainframe systems, according to Meta Group Inc. in Stamford, Conn. And many companies have concluded that those legacy systems are at least as capable as Unix or Windows NT Server when it comes to dishing out data over the Internet or intranet. "We already know that our S/390 can share information efficiently, securely and cost-effectively to a wider universe," such as the Web, says Michael Conchatre, manager of information systems at Ducks Unlimited Canada in Oak Hammock Marsh, Manitoba.

Another reason for slapping Web front ends onto mainframes is the huge cost savings to be gained in cost-of-ownership for client systems. According to a recent Gartner Group Inc. study, businesses realize 15% savings in software costs such as distribution and maintenance and 15% in technical support from replacing IBM 3270 terminal emulation software with a Web browser.

That's not to say mainframes make perfect Web servers. For one thing, you can't boost their CPU power incrementally to cope with escalating Web traffic as you can with LAN servers. And mainframe vendors have been slower than their NT and Unix counterparts to support crucial Web tools and protocols, users report. But they're catching up. In the past year, IBM has improved the performance of TCP/IP stacks and introduced Java support. Web-to-host products also are improving. Designing the right Web-to-host configuration remains tricky, users note, involving difficult decisions like whether to put the Web server on the host or a middle tier and whether to use Java or ActiveX or the Internet programming language HTML. Still, users agree that the results are more than justifying the effort.

Here's a look at how five mainframe sites have dealt with Webification.

Quick, Inexpensive, Secure

COMPANY: Diversified Investment Advisors Inc., Purchase, N.Y.

A financial investment firm that specializes in corporate retirement accounts

About 800 employees

MAINFRAME: Hitachi 9170 (IBM-compatible)

USERS: Total potential user base is 750,000 outside customers

To swim with the sharks (and whales) in the mutual-fund market, Diversified needed a quick, inexpensive way to allow customers to access key information about their accounts and perform transactions via the Web.

CONFIGURATION: Users access the Diversified Web site and download an encrypted Java applet that provides a graphical user interface (GUI) for database querying. The browser sends the queries to Diversified's Windows NT 4.0 Server running Netscape Enterprise Server and OpenConnect Systems Inc.'s WebConnect Pro. WebConnect Pro connects to the mainframe via IBM 3270, accesses the requested data, loads it into a single HTML page and downloads it to the client's browser.

STATUS: It took eight months, including training programmers in Java, to set up "quite a sophisticated" GUI-based Java Web-client application, says Jim Stewart, telecommunications manager at Diversified. A growing number of Diversified's 750,000 customers are using the application. The company now is testing applets that will allow customers to perform actual transactions such as shifting fund allocations.

Designing the right Web-to-host configuration remains tricky, involving difficult decisions like whether to put the Web server on the host or middle tier and whether to use Java or ActiveX or HTML.

REASONS FOR CHOOSING WEBCONNECT PRO: The whole setup costs about $10,000. Other vendors proposed building customized Web clients that would have cost about $500,000, not including the host connection, Stewart says. And here's another WebConnect Pro plus: RSA Data Security Inc. certificate-based encryption to assure users that the applets are from a bona fide source.

Why Java? A single Java applet can get data from several areas of the mainframe. In contrast, Common Gateway Interface (CGI) scripts require moving to a different screen to access each new area of the host. "Each new screen takes 30 seconds, an eternity for the user," says Robert Knowles, Diversified's webmaster.

CHALLENGES: The biggest one was getting the applets down to customer desktops, Knowles says. "Our customers may have any desktop system and every type of firewall configuration known to man," he explains. "So we had complaints coming in, some weirdly configured firewall that wouldn't let the right port be accessed in order to download the Java applet." Diversified addressed that problem by talking to the users' information technology departments, explaining the problem and convincing them the applet was secure.

Webifying the Mainframe, page 78

Continued from page 77

Webifying the Mainframe

Web Feat

COMPANY: Ducks Unlimited Canada, Oak Hammock Marsh, Manitoba

Canada's largest wildlife conservation group

MAINFRAME: IBM S/390 ESO running VM/ESA

DATABASE: Software AG of North America's Adabas and Natural

USERS: Eight thousand volunteer staff members in 40 offices; Web-site visitors

Ducks Unlimited got the best of both worlds with its mainframe Webification: "We get to keep our existing [mainframe-based] development tools, expertise and applications," while exploiting the Web's ability to disseminate crucial information to a highly distributed, diverse body of users, says Michael Conchatre, manager of information systems.

CONFIGURATION: The EnterpriseWeb/VM Web server from Beyond Software Inc. sits on the mainframe and fields browser queries from the intranet and Internet. The server uses a single CGI script to initiate Natural routines that gather the Adabas data and convert it dynamically into HTML pages that are sent to the user's browser.

STATUS: Hundreds of Natural/Adabas mainframe applications are now Web-enabled. New ones include a Web-based membership recruitment program that took six months to develop.

REASONS FOR CHOOSING CONFIGURATION: "We didn't want a pile of [CGI scripts], so we put the bulk of intelligence into Natural," Conchatre says. Putting the Web server on the host "eliminated the middle tier, another component that might break."

CHALLENGES: The major challenge was finding a way to track client-to-host interactions in the Web's stateless environment. With the Web, "if something goes wrong, the service machine created to handle a given transaction sends an error message, but then the service machine ceases to exist" along with whatever information it had collected, Conchatre says. The solution: writing code "to tuck away information about an interaction in Adabas."

Beyond the Browser

COMPANY: Bridgestone Firestone Inc., Akron, Ohio

MAINFRAME: IBM S/390, MVS

DATABASE: DB2

USERS: Chemists and engineers at the chemical and tire company's technology center

Bridgestone Firestone is doing a lot more than tacking a Web browser front end onto its mainframe applications. "We now have a development environment to establish Web-based applications that can hit either legacy [mainframe] databases, or LAN-based databases or both" and serve them to the users as a single HTML page, says programmer/analyst Shawn Stewart.

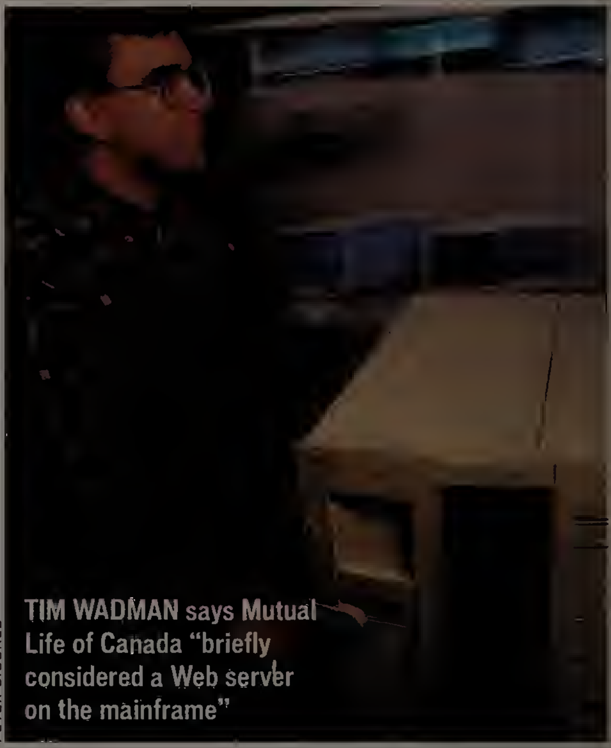
CONFIGURATION: Internet Explorer browsers download mainframe querying applications from Microsoft Corp.'s Internet Information Server (IIS). They can then send queries to StarQuest Software Inc.'s StarSQL Pro Web server configuration also running on the NT server. StarSQL Pro Web links to the mainframe via Microsoft SNA Server, accesses DB2 via an Open Database Connectivity connection, builds and downloads HTML pages.

STATUS: Some applications have been built and released; more are planned for this year. Hundreds of users at the technology center are online, and a corporatewide rollout is planned. The company also is building ActiveX applications that can query across DB2 and a SQL server.

REASONS FOR CHOOSING CONFIGURATION: Using familiar Web tools minimizes retraining of developers and administrators. Thin Web clients minimize software maintenance costs.

Developers can use familiar programming languages like Visual Basic to develop ActiveX applications. They don't have to learn HTML, which is difficult to maintain in any case, Stewart says.

CHALLENGES: The company had some difficulty finding the right techniques and tools for developing Web applications to access legacy databases. Many products required too much maintenance, support and retraining of developers, Stewart says.



TIM WADMAN says Mutual Life of Canada "briefly considered a Web server on the mainframe"

PETER SIBBALD

Phasing in Users

COMPANY: Mutual Life of Canada, Waterloo, Ontario, lead company of The Mutual Group (group pension plans, group life and health insurance policies)

MAINFRAME: IBM S/390 running MVS

DATABASE: IBM IMS

USERS: Remote internal users and some external customers with direct access rights to mainframe data on Mutual Life products, customer files and so on.

Rather than forcing users to abandon familiar terminal-to-host interfaces cold turkey, Mutual Life provided the familiar 3270 "green screens" and IMS screens as a window on users' browsers. The old access methods will be phased out gradu-

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Faster, Faster, Cheaper, Cheaper

Watch for a new wave of price/performance improvements in the mainframe realm during the next five years, says David Floyer, an analyst who runs IT Impact in Mountain View, Calif., and works in partnership with International Data Corp. in Framingham, Mass. He says that when IBM released its CMOS-based G5 series of S/390 mainframes last year, it marked the first time in five years that a mainframe in high-volume production was significantly faster than its predecessor.

Now IBM will build on that CMOS foundation to continue to improve mainframe performance while also reacting to pricing pressure from high-end Unix servers, such as those from Sun Microsystems Inc. and Hewlett-Packard Co. Floyer says it's important that IBM stay competitive on price if it hopes to increase the mainframe's presence in applications such as enterprise resource planning (ERP).

What does that mean to the IT manager? Floyer estimates that performance of the top IBM single-processor mainframe jumped from 71 million instructions per second (MIPS) in 1997 to 126 MIPS by mid-1998. He predicts that figure to hit 797 MIPS in 2002, for a compound annual growth rate of 62.2%. Meanwhile, the cost for each of those MIPS should plummet. He places the cost/MIPS at $6,776 in early 1998 and just $842 in 2002, for a compound annual decrease of 36.1%.

Then vs. Now

IBM compares the S/390 with some of its predecessors by noting that the air-cooled, CMOS-based system uses core components weighing less than a pound, while the core of the water-cooled, ECL-based mainframes of a generation ago weighed thousands of pounds.

Floyer estimates that a single-processor G5 ran at 126 MIPS in 1998. A G5 packs a minimum of 5G bytes of memory and dedicated I/O processors and costs about $758,000, if you pay an estimated $6,000 per MIPS. Meanwhile, a look back at a *Computerworld* article on the release of IBM's 3090 Model 150 in 1986 shows that it ran about 10 MIPS, had a base memory of 32M bytes, offered 16 channels to separate mainframe-sized controllers, required water cooling and started at $1.7 million.

Snippets

A look at some of the mainframe news highlights from last year to today.

- IBM is aggressively marketing the 29-year-old CICS in an attempt to convince customers it's a key technology for the Internet. The push makes sense: Sales of CICS help IBM pull in billions of dollars of revenue in hardware, additional software, and outsourcing and maintenance services.
  — *Time* magazine, Jan. 11, 1999
- Oakland Calif.-based Forte Software Inc. last week joined other component-based application-development vendors – including IBM and Compuware Corp. in Farmington Hills, Mich. – in offering a version of its application server for the OS/390 mainframe.
  — *Computerworld*, Dec. 4, 1998

ally in favor of "a nice Web GUI interface," says Tim Wadman, technology solutions consultant at The Mutual Group.

CONFIGURATION: Browser clients can access an internal Mutual Life Windows NT Server that runs Internet Information Server via a virtual private network (VPN) over IBM Global Network or an internal Remote Access Service dial-in platform. Wall Data Inc.'s Cyberprise Server running Cyberprise Host (also on the NT server) downloads an ActiveX application to the browser. The application sets up a window on the browser through which the user can link up to the mainframe via Cyberprise Host TN3270E emulation to access and manipulate IMS screens of data.

STATUS: 500 users, with plans to roll out to all 3,500 users by June.

REASONS FOR CHOOSING CONFIGURATION: "We briefly considered a Web server on the mainframe, but we'd have to do upgrades first. And we still have security concerns about providing direct mainframe access from the Internet," Wadman says. "We need to understand the risks better."

The VPN link creates a secure, reliable intranet that external and internal customers can use to download the client application and access the mainframe, Wadman says.

CHALLENGES: "A big challenge has been getting a base [mainframe data querying] functionality to users in an [ActiveX Control] solution that isn't too unwieldy to download," Wadman says.

There also has been difficulty providing access to customers "with unusual browsers or unusual versions of Microsoft C++ runtime libraries or some other crazy thing installed on their machines," he adds.

SECOND PHASE: Provide comparable services to additional external customers via the Web.

> A big challenge has been getting a base functionality to users . . . that isn't too unwieldy to download.
>
> TIM WADMAN, THE MUTUAL GROUP

STATUS: Still choosing products.

CONFIGURATION (TENTATIVE): Looking at Wall Data Cyberprise Host Developer kit and other products that "would allow an IIS server to communicate with the host, scrape data off [IMS] screens, incorporate it into an HTML Web page and fire it off to the client machine," Wadman says.

CHALLENGE: Mutual is still figuring out how to present data in a more interactive fashion, "such as a spreadsheet on a GUI Web page," Wadman says. Although the above configuration allows users to download raw data streams from the mainframe, it loses "the value of the business logic that's programmed into [IMS] screens. Data doesn't mean as much if you can't manipulate it."

Going With Standards

COMPANY: Via Christi Health System, Wichita, Kan. (health services)

MAINFRAME: S/390

DATABASE/APPLICATIONS: CICS applications and Shared Medical Systems Clinical Invision Systems

USERS: Physicians who need access to data (patient records, schedules, laboratory results) from the office, their homes or a hospital

CONFIGURATION: Physicians use standard Internet access tools such as Windows 95/98 Dial-up Networking and Microsoft Internet Explorer to connect to a Windows NT Server on the corporate network. The server runs IBM's eNetwork Host On-Demand NT and eNetwork Communications Server for NT. The user is given an internal uniform resource locator to a Web page on the server from which he can download the Host On-Demand Java applet to the browser. The applet makes a TCP/IP connection to the eNetwork Communication Server and requests a session with the mainframe.

Security is handled by authenticating at the point where the user dials in to the network. When the host session is established, the user also authenticates with the host. "This double-tier approach allows us to keep everything pretty secure," says Dave Gestenslager, open systems manager at the health services company.

STATUS: The company started looking a year ago but found no products to meet its needs. It resumed its search about three months ago, tested the available products and chose Host On-Demand, then in beta. It then waited for general availability, retested the product within a limited group of physicians and is finishing the rollout this month. Total number of users: 800.

REASONS FOR CHOOSING CONFIGURATION: One was that other options, such as a new modem bank on the mainframe, lacked several desired features. One such feature was PC-to-mainframe access that included keyboard mapping, "so that physicians would use the same keyboard functions wherever they happened to be," Gestenslager says. Physicians also needed to be able to establish 3270 print sessions that output to their local printer. ENetwork Communications Server provides that through its TN3270E support. As soon as IBM delivers TN3270E support directly on the mainframe, Via Christi plans to move the Web server up there, eliminating the middle tier. Another reason was cost savings. Host On-Demand pricing is set by the number of concurrent users, although most terminal-to-host products charge by the total number of seats. "So we just bought enough seats for the total number of dial-up lines" to the mainframe, for a savings of $200,000 compared with deploying a more conventional terminal emulation product, Gestenslager says.

CHALLENGES: The biggest, Gestenslager says, was finding the right product. ◗

Horwitt is a freelance writer and editor in Newton, Mass. She can be contacted at Ehorwitt@compuserve.com.

- IBM's only mainframe rivals – Hitachi Data Systems Ltd and Amdahl Corp. – announced separate reorganizations meant to make them less dependent on mainframe sales.
  — *Computerworld,* Nov. 23, 1998
- In a major pricing simplification, IBM this week announced that it's condensing its nine licensing categories into two umbrella schemes – one based on hardware capacity and the other on software usage.
  — *Computerworld,* Oct. 2, 1998
- After riding a resurgence of centralized computing, the mainframe computer is under threat again. High-end Unix servers, most notably from Sun Microsystems Inc., are fast gaining in the bulletproof features so coveted by mainframe stalwarts. -
  — *InfoWorld,* Sept. 10, 1998
- Amdahl announced technology that gives corporations a way to upgrade mainframes – or consolidate applications on them – without incurring huge software license cost increases. In certain application environments, Amdahl's Multiple Server Feature option could help firms knock off 20% to 30% from their annual software costs.
  — *@Computerworld,* June 29, 1998
- Amdahl said its latest 800 series of mainframe computers – due to be released early [in 1999] – will exceed the power of IBM's forthcoming System 390 fifth-generation mainframes.
  — *@Computerworld,* June 23, 1998
- IBM announces Generation 5 System/390 mainframe line with the goal of restoring IBM to the position of mainframe performance leader. IBM will use the new machines to battle Unix servers for the right to host electronic commerce, Unix and enterprise resource planning systems, while fending off incursions by mainframe rival Hitachi Data Systems Corp.
  — *@Computerworld,* May 1, 1998
- Amdahl will unveil its 700 Series Millennium mainframes. The machines include 80-MIPs CMOS engines, which are higher than the 75-MIPS machines promised by Amdahl when it laid out its plans to upgrade its offerings last summer.
  — *@Computerworld,* Feb. 2, 1998
- Microsoft and mainframe maker Amdahl Corp. inked a deal to integrate Windows NT into the mainframe world. Microsoft's agreement will count on Amdahl's DMR consulting subsidiary to help customers migrate mainframe applications to Windows NT and integrate new NT applications with legacy data.
  — *@Computerworld,* Feb. 2, 1998
- World Wide Web sites usually are powered by much smaller Unix or Windows NT servers. But as electronic commerce matures, some companies have found that hosting a Web site on a mainframe provides more horsepower for high-volume transactions, greater reliability and faster access to databases.
  — *@Computerworld,* Jan. 1, 1998

User conferences:

Share and Guide Inc. are the two biggest large-system user groups.

- Share's next Share Technical Conference is being held Feb. 21-26 in San Francisco. More details are available at *www.share.org.*
- Guide's next conference, "Engage! E-commerce," is being held May 16-19 in Palm Springs, Calif. More details are available at *www.guide.org.*

In a developing story,

IDG.net and CNN.com

have been linked in a technology information coup

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You've Heard Of Digital Ink; How About Digital Paper?

Xerox tests a high-resolution, ultrathin display that holds text for months By David Orenstein

PUT THE ELUSIVE pipe dream of the paperless office out of your mind for a moment and consider this: Paper isn't so bad, especially when it's actually a digital display that can exhibit all manner of electronic documents.

Prototypes of such a missing link between paper and computer screen exist today in the cluttered lab of Nicholas K. Sheridon, a senior research fellow at Xerox Corp.'s Palo Alto Research Center in California. Sheridon invented Gyricon, or Electric Paper, a silicone rubber sheet that, including its plastic sheathing, is as thin as poster board and about as floppy. By virtue of thousands of tiny embedded plastic balls that act as pixels, Gyricon sheets can hold digital images for months without power and can display those images off the juice of two AA batteries. Moreover, the sheets refresh and update images much the way a monitor does.

Electric Paper could offer a more natural-feeling way to handle and store documents than a rigid, klunky laptop does. The information in documents is constantly changing, and Gyricon displays can constantly change with it.

Gyricon sheets in mass production could be priced at about 25 cents apiece, according to Xerox laboratory manager Bob Sprague. All the computing power would reside in either a binder holding the sheets or in a wand or stylus device. Either gadget would receive data wirelessly and imprint text and images on the sheets, refreshing them as often as needed.

Because all the power, weight and cost is on a remote server and the wand or binder, Electric Paper theoretically provides a window to the spontaneity and bottomless capacity of the Internet in a package as reader-friendly as paper and as dispensable as a floppy disk.

That's the theory.

In practice, many technological wrinkles remain to be ironed out. Don't expect workable products for a few years, Sprague says. Among the challenges: increasing resolution, sprucing up the whiteness from the current LCD gray, developing full color, making the sheets fully erasable and shielding them from electrical interference.

Sprague says Xerox has begun to work with a partner to address manufacturing logistics. Here, too, there are myriad questions: How will the wand and binder devices be fabricated? What needs to be done to establish the drivers and interfaces among the devices, corporate networks and the Web?

How It Works

Gyricon works when an electrical charge is applied to the tiny plastic balls, which are suspended inside the sheet in pockets of oil. Each ball is black on one side and white on the other. Depending on its charge, a ball shows one side or the other. Those pixels compose a full screen of text and graphics. The wand or binder manipulates the electrical fields in which charges are applied. The devices eventually could read the pages as well as write to them, making them two-way.

But how will it work for IT?

Daniel Rasmus, an analyst at Giga Information Group Inc. in Cambridge, Mass., says the displays could make it easier to electronically mark up documents. Workers could treat electronic documents just like paper ones: They could lay a Gyricon on a table, mark it up with a stylus and scan their input back to the server. But Rasmus adds that as a large, floppy system for browsing the Web or handling E-mail, Electric Paper may offer little advantage over the handhelds of the future.

Terry Richards, information technology director at the National Association of Realtors, says Electric Paper seems intriguing and likely has useful applications. But Richards says he couldn't immediately identify a need that Electric Paper would fill.

For Sheridon, seeing Gyricon in use would be the culmination of decades of work. He first developed Gyricon in 1977. "Xerox decided they weren't really in the display business [then]," he says. ◗

Orenstein is a Computerworld *staff writer. His Internet address is david_orenstein@computerworld.com.*

XEROX'S NICHOLAS SHERIDON invented Gyricon, or Electric Paper (photo at bottom left), a silicone rubber sheet that can hold digital images for months without power. All the computing power of Electric Paper would reside in either a binder holding the sheets or in a wand or stylus device (photo at top right).

ELEGANCE REVISITED

Last year, *Computerworld* published an article suggesting that the best programmers are those who strive for "elegance" — power plus simplicity — in their coding. Many readers agreed, but some did not, and others proposed we do a follow-up story on related issues. Over the Internet, we recently asked a panel of software experts for their thoughts. By Gary H. Anthes

LARRY GOODE

CW: *What are the mental traits of the best programmers?*

BOOCH: The ability to "abstract" — to think at several levels of abstraction simultaneously — seems to distinguish the really outstanding programmer from the average one.

MIDDLETON: Good designers use a heuristic process of rapid mental modeling and simulation — trial and error carried out at warp speed. The main job of a programmer is building air castles and rebuilding them until they stand.

LOWENSOHN: For me, the best programmers are those who really care about the user as a person, those who live to see a smile on the [person's] face. They not only put on the user's hat, they figure out what the user will be happier with even if the user doesn't know that at the moment.

GABRIEL: They are able to hold a lot of facts in their heads, pay attention to details (obsessively), tend to take things literally, speak with precision and grammatical correctness, have a very strong sense of right and wrong, like gizmos of all kinds and like to make up words. Many of them are musical. Most of them read science fiction. They are very persistent. They generally don't have egos that bruise easily. They think in terms of process — what steps will solve a problem — and usually will try to break something complex down into small parts or steps.

CW: *What coding philosophies or broad techniques do the best programmers use?*

MIDDLETON: Quality needs to be a priority from the first step. "Make it first, then make it correct" is a rule for creating Rube Goldberg contraptions. Manage and minimize complexity. Program in the language of the problem domain. Modularize. Create levels of abstraction. Break the problem down into pieces that your mind [and that others] can readily grasp. Write as if the computer were a human being. Programs must be able to communicate with people as well as machines.

WALTERS: The way great programmers approach a problem is to go beyond the problem of the moment to try and figure out a more general class of problem, or to [break down] the problem into a set of more general ones. They see beyond the clutter and maybe match this problem with another one they've seen before.

GABRIEL: The best programmers don't need the tools represented by best practices. They can hold the entire problem in their heads without difficulty. Following a deliberate process just slows them down. If you watch a poet or fiction writer, once they've got the idea of what to write, they just start writing. It is the same with any art. Software to the best programmers is an art.

CW: *Why do programmers often not employ the best techniques?*

SCHROEPPEL: The people who wander around defining "best" practices spend more time giving speeches than writing code. In the real world, the fact that these "best" programs are too costly for the benefit they provide is reflected back to the programmer by his boss: "Isn't that done yet?" "Why are you wasting time on that?"

BOOCH: These things are largely not taught in universities. Second, in the heat of battle, most developers will view every problem as something that's "simply a matter of programming" [without attention first to careful design.]

LOWENSOHN: Just sitting and thinking is not allowed in our culture. But I tell my people thinking is an OK sport.

MIDDLETON: Employers have a great tendency to train in specific platforms, rather than training in the meta skills. And the environment in far too many shops seems designed to hinder best practices. There are no incentives for programmers to improve themselves. Managers often expect programmers to [write code]; and vital noncoding activities such as planning and research are discouraged. Gonzo programmers work by bashing some code together and throwing it into the computer to see if it runs, getting caught in an endless cycle of hack-and-recompile. And they look for opportunities to hold marathon coding sessions, believing that God created the world by goofing off for six days and then pulling an all-nighter.

> **LOTS OF PEOPLE WRITE CONVOLUTED STUFF AND CALL IT ELEGANT BECAUSE IT'S NEW.**
>
> — Jay Walters, Oracle

GABRIEL: A lot of the bad software we have is the result of business decisions forcing things to get done too fast and without the benefit of learning from failures. I'd like it to be an option for a programmer to say no to a request to do things too quickly.

CW: *What should programmers study?*

WALTERS: We need to teach the basic building blocks of software, like patterns, which provide a basic set of solutions to common problems. Providing this information to programmers in school and showing them how to map [a] problem onto a general and a known one would go a long way to making more elegant designers and coders of us all.

MIDDLETON: Teachers concentrate on analysis, architecture, testing and project management, while information on construction practices is left to circulate through the front ranks as a kind of lore. For example, choosing names for routines is a construction practice. A good broad practice would be to choose clear, unambiguous names.

CW: *Is writing elegant code important?*

SCHROEPPEL: In the ordinary work of programming, elegance is a secondary virtue. The primary goal is acceptable quality for least-total-cost. Sometimes cheap, low-quality software is the right solution.

MIDDLETON: Companies can no longer afford to indulge the protocols of nerdish my-code-is-one-byte-smaller-than-yours dominance rituals. The long-term health of the product is more important to the company than the brilliance of the code. We need to emphasize the process rather than the product if we want better code.

WALTERS: There isn't an elegant solution to every problem. Some problems aren't complex enough to merit that label. Lots of people write convoluted stuff and call it elegant because it's new. They think it's great [but] nobody understands it.

BOOCH: You can build good doghouses with excellent craftsmanship, but you can't build a high-rise on good craftsmanship alone: You need a well-formed architecture. Thus, I care less about elegant algorithms and far more about elegant architectures — simple, resilient and full of patterns.

LOWENSOHN: Elegance is how smoothly the technology slips past the user's consciousness and gets out of the user's way.

CW: *How can the IT manager find and nurture great programmers?*

MIDDLETON: The main quality to look for is a passionate interest in the development process. Does the candidate ever review and question his/her own coding methods? Is the candidate familiar with a range of analytical methods, as opposed to fanatically following the methodology guru of the month? Trainable candidates will be egoless, curious and disciplined. Show gonzo programmers to the door.

Increase opportunities for peer exchange through such programs as mentoring, peer code reviews and code sign-offs. Clearly communicate the importance you place on quality code: Make a gift to each programmer of at least one good book on software; put together a lending/reference library; when a programmer produces exceptional code, circulate or post the listings for others to review and discuss; put together an archive of these examples, perhaps on an intranet web site, with annotations and explanations of the principles illustrated.

WALTERS: [I] give prospective employees a programming problem and see where they go with it — usually at the design level, not anything where they need to write code. Then I see how they approach the problem, what questions they ask. Do they go for a general solution? Do they overcomplicate the problem? Do they try and start with little incomplete bits, or do they come out with a pretty complete solution as a unit?

SCHROEPPEL: Find someone who's already written either the program you want or a similar one. The best training is on-the-job mentoring — apprentices.

LOWENSOHN: Programmers should be taught to consider themselves smart if they can use other people's good work.

WALTERS: Reuse of elegant code is still elegant code, even though it is occasionally hard for the ego. ◗

Anthes is Computerworld*'s editor at large. His Internet address is* gary_anthes@computerworld.com.

MOREONLINE

You can find both the original Elegance article and a unique companion piece to this story at **www.computerworld.com/more**

THE VIRTUAL PANEL

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Notebook Extremes

BY CHRISTOPHER LINDQUIST

HEFTY OR NIFTY? It's your choice. Some of the key battles in the notebook sector will take place at the extreme ends of the market this year.

Whether you want a tiny 3-pounder that costs less than $1,000 and will still run Windows 98, or a full-blown desktop replacement with a huge 15-in. screen, you can have it.

Most of the current hype focuses on the smaller-is-better mantra of slim portables such as Sony Corp.'s Vaio 505 line and Mag Portable's TinyNote (see review below).

But some equally interesting developments are taking place on the desktop replacement side. For workers who want a machine they can carry from the office to home and back, minimal weight and a tiny form factor aren't as critical as comfortable keyboards, large screens and desktop performance.

> PRICE DROP
>
> **Businesses pay** an average of $3,000 for a laptop, according to Matthew Nordan, an analyst at Forrester Research Inc. in Cambridge, Mass. That will drop to $1,700 within four years, he says, as features catch up with needs, allowing buyers to sidestep the pricey cutting edge while still getting the power they want.

Toward that end, vendors are beginning to build larger, heavier machines that offer huge hard drives, up to 8M bytes of video RAM, three-dimensional acceleration hardware and screens that rival 17-in. CRTs for viewing space. The 9-pound Dell Inspiron 7000 series (see review at right) is a typical example of these new machines, offering everything a user could need in an all-in-one, luggable package with enough power to do any business task and function as a true desktop replacement.

And the Inspiron may be only the tip of the iceberg. Martin Reynolds, an analyst at Gartner Group Inc. in Stamford, Conn., predicts a trend toward LCD PCs, larger machines that may even come with handles. According to Reynolds, these not-quite-transportables could account for 10% of the portable market by 2002.

Laptop Notable

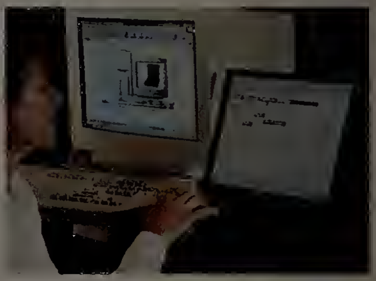
Laptops currently make up about 25% of corporate computer purchases, according to Rob Enderle, an analyst at Giga Information Group Inc. in Cambridge, Mass. But falling prices and improved performance will raise that figure to about 35% by the end of the year, he says. And it's likely to approach 50% by the middle of the next decade.

Read on for reviews of two systems that offer vastly different approaches to portable computing. ◗

Lindquist is a reviewer in Moss Beach, Calif.

INSPIRON 7000 D300LT

$2,808
Dell Computer Corp.
www.dell.com

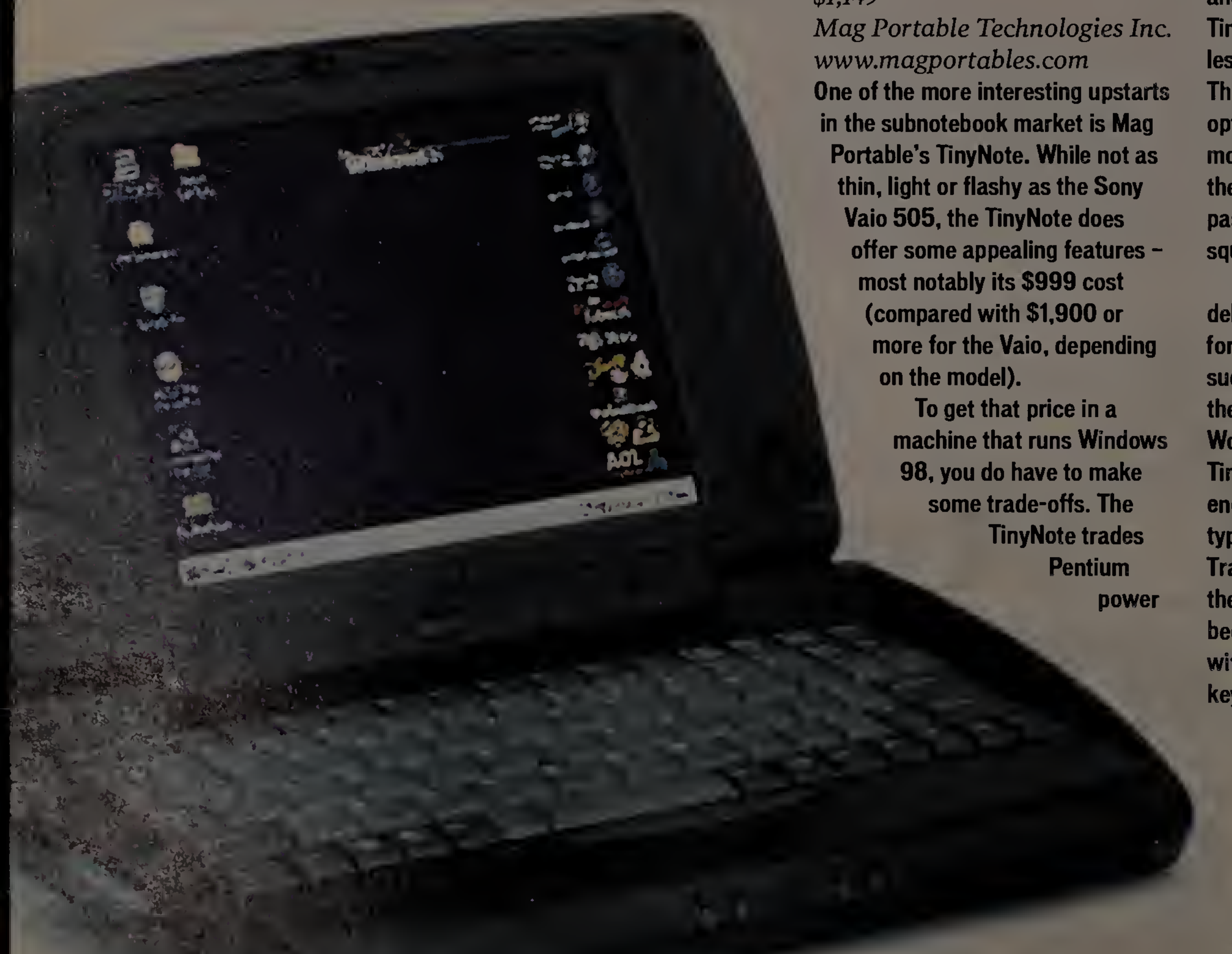


With a travel weight of more than 9 pounds, a height of 2.5 in. and a width of almost 13 in., the Dell Inspiron 7000 D300LT is a "luggable" by late-'90s standards. If you're looking for an all-in-one desktop replacement that can travel easily between home and office, however, this machine is built for the job.

The Inspiron 7000 packs loads of features, both out in the open and under the covers. It offers a full complement of ports, including a direct-to-TV S-Video out adapter cable and Universal Serial Bus connector. With its stacked 24-speed CD-ROM and floppy drives, you won't be swapping to use different media (digital video discs or floppy discs are also available.) The bright 15-in. thin film transfer display holds its own against 17-in. desktop monitors – no eyestrain here. And the full-size keyboard makes typing a joy.

Inside the box, you get an equally interesting features list. The 300-MHz Pentium II processor provides the bulk of the Inspiron's power, but Dell boosts things further by offering up to 8G bytes of hard disk storage and an ATI Rage LT Pro 2X AGP graphics card with up to 8M bytes of synchronous graphics RAM. Translated into plain English: This laptop may be faster – a lot faster – than your current desktop machine.

THE TINYNOTE from Mag Portable offers a simple and inexpensive way to work on the road



TINYNOTE 200TNS-02

$1,149
Mag Portable Technologies Inc.
www.magportables.com

One of the more interesting upstarts in the subnotebook market is Mag Portable's TinyNote. While not as thin, light or flashy as the Sony Vaio 505, the TinyNote does offer some appealing features – most notably its $999 cost (compared with $1,900 or more for the Vaio, depending on the model).

To get that price in a machine that runs Windows 98, you do have to make some trade-offs. The TinyNote trades Pentium power for a Cyrix 200-MHz GX processor. And the system's nickel metal hydride battery pack is quite large and heavy, contributing to the TinyNote's 3.6-pound weight (vs. less than 3 pounds for the Sony). The internal V.90 modem is optional (other systems include modems in the base price). And the TinyNote's relatively dim 8-in. passive LCD display may leave you squinting.

On the plus side, the TinyNote delivers more-than-adequate performance for basic business tasks, such as checking E-mail, cruising the Web or creating Microsoft Word documents. I also found the TinyNote's keyboard comfortable enough for some serious touch-typing. I preferred the TinyNote's Track Point III pointing device to the more common touchpad because it let me use the mouse without lifting my hands off of the keyboard. In addition, the TinyNote tops things off with a solid, sturdy feel.

If you want a simple and inexpensive way to stay connected and get some work done while on the road, Mag's new portable is worth consideration.

"Our readers don't think about business in terms of technology. In fact, a lot of the people I talk to aren't even in the IT department. They're marketing managers trying to figure out how to use e-commerce to sell widgets. Or business owners working to keep their supply chain intact. My job is to help people connect the dots...to see how others are doing things, where the pitfalls are, and how they can avoid them. That's what business leaders need to know. I try to give them some new ideas, to spark their imagination. I want our readers to walk away charmed and connected. But most of all, I want them to come back."

Live Wire

Julia King, National Correspondent

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And the winner is . . .

BY LESLIE GOFF

HISTORY was made on election night, 1952: in politics, journalism and business computing. The CBS newsroom was abuzz with reporting the election returns. Democratic presidential candidate Adlai Stevenson was the front-runner in all the advance opinion polls, but by 8:30 p.m. on the East Coast — well before polls were to close in the Western states — one pundit was now projecting 100-1 odds that Dwight D. Eisenhower would win by a landslide.

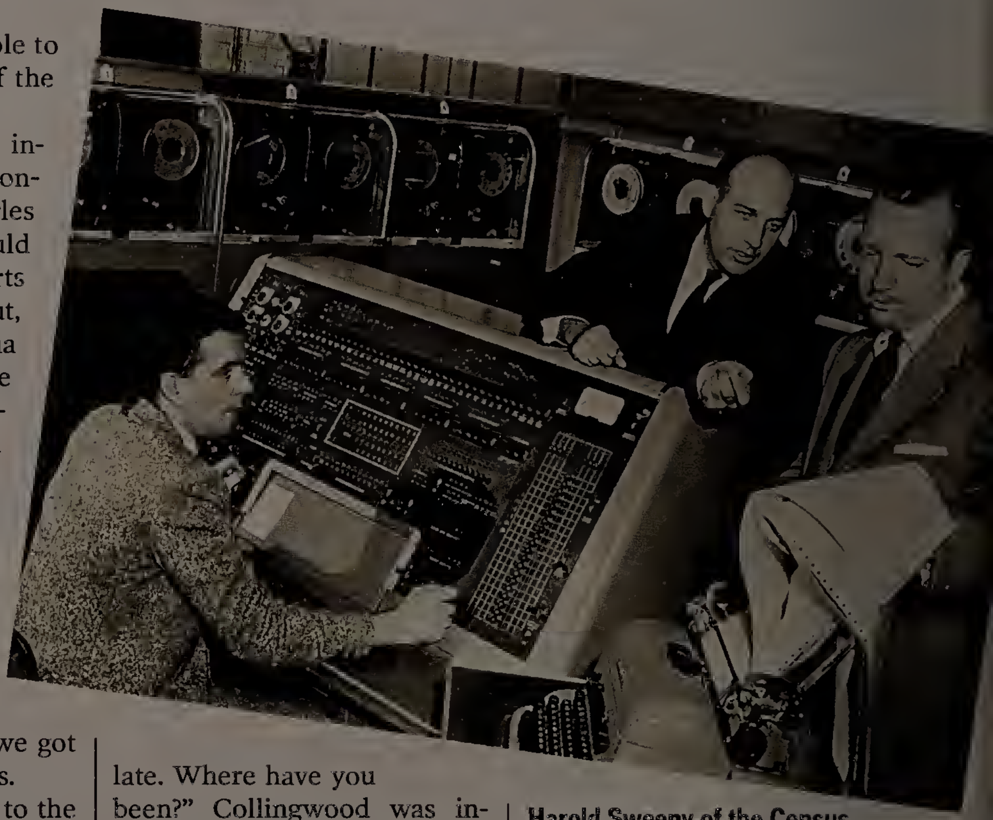
That pundit wasn't a human being, however. It was the Univac I, the only general-purpose computer of its day. And its use that night, Nov. 4, 1952, marked one of the first times a company used a computer to gain competitive advantage.

But CBS news reporters were too busy scrambling to report results to think too much about the Univac. "I don't think any of us saw the long shadow in the newsroom at all," recalls Walter Cronkite, who anchored the news desk that night. "We saw it as an added feature to our coverage that could be very interesting in the future, and there was a great deal of pride that we had this exclusively. But I don't think that we felt the computer would become predominant in our coverage in any way."

The CBS news team, led by Sig Mickelson, then director of news and public affairs, got acquainted with the Univac in August. A public relations representative at Remington Rand's Eckert-Mauchly division said he "could give us a machine that would predict the election returns," Mickelson says. "I knew enough to know that wasn't true, but I knew it would be possible to speed up the analysis of the returns."

CBS staff members, including Mickelson, Cronkite and reporter Charles Collingwood, who would deliver the on-air reports about the Univac's output, traveled to Philadelphia to see the grand machine for themselves. "The earliest admonition we had about the computer was to quit using the phrase *electric brain.* The folks in Philadelphia tried to convince us that the Univac didn't have a brain, and that whatever we fed into it would determine what we got out of it," Cronkite recalls.

Collingwood was late to the meeting, and when he arrived, the Univac greeted him, via a teletype machine, with a message: "Collingwood, you're late. Where have you been?" Collingwood was instantly won over, and the tone for his reporting was set.



Harold Sweeny of the Census Bureau, Univac inventor J. Presper Eckert and Walter Cronkite view projected election results

With only three months to go to the election, the news team began working with Max Woodbury, a mathematician from the University of Pennsylvania, to gather the data and write a program that would make the Univac tick. Woodbury devised an "if X, then Y" program.

On the evening of Nov. 4, Woodbury and Mauchly were stationed at the Univac, Collingwood was ensconced in the CBS studio, Cronkite was on the anchor desk, and a teletype machine was set up to relay the information back and forth. By 8:30 p.m., the Univac was calculating 100-1 odds in favor of Eisenhower. Those odds didn't sit well with anyone; it looked like the project might be a failure.

"We had been convinced that the Univac would have the right answer," Mickelson says.

Mickelson made the call not to use the odds, and Woodbury crunched a second set of numbers. About 9 p.m., Collingwood reported to CBS viewers that the Univac was putting 8-7 odds on an Eisenhower victory. But Woodbury detected a mistake in the data he fed the Univac on the second round: He had inadvertently added a zero to Stevenson's total votes in New York State. He ran a new set of numbers, and Eisenhower's odds jumped back up to 100-1, and stayed there.

As it turned out, the Univac — and Woodbury's program — were accurate nearly to a fault. The first run of the numbers had predicted an electoral vote of 438 for Eisenhower and 93 for Stevenson. The official count was 442 for Eisenhower and 89 for Stevenson — an error of less than 1%. On the popular vote, the Univac projected a total of 32,915,000 nods for Eisenhower, which was only about 3% off the official total of 33,936,252.

And the Univac did in fact put CBS ahead of its competition, at least technologically. The network was the first to call the race. By the 1956 elections, all three networks were in the computer game. ◗

Goff is a frequent contributor to Computerworld. *She can be reached at lgoff@ix.netcom.com.*

MOREONLINE

For a Q&A with Walter Cronkite and an article on early technology contributions from women, visit our Web site: **www.computerworld.com/more**

Technology Advances:

EDVAC runs the first production program.

Thomas J. Watson Jr. becomes president of IBM.

U.S. government begins its antitrust suit against IBM.

Grace Hopper publishes *The Education of a Computer,* describing the concept of reusable software.

Gene Kelly in *Singin' in the Rain*

1952

Heinz Nixdorf founds Nixdorf Computer Corp. in Germany.

John von Neumann's IAS computer becomes operational at the Institute for Advanced Studies in Princeton, N.J.

First proposed pay TV system is developed at Zenith, using punch cards.

The Times:

February: George VI dies, Elizabeth II becomes Queen of England.

March: Jonas Salk announces a vaccine for immunization against polio.

April: Kemmons Wilson builds the first Holiday Inn on U.S. 70 in Memphis.

August: The second volume of the Kinsey Report, *Sexual Behavior in the Human Female,* is published.

November: George Jorgensen Jr. becomes Christine Jorgensen after undergoing the first sex-change operation, in Denmark.

Other Noteworthy Events:

Singin' in the Rain is released.

L. Ron Hubbard founds Scientology.

Oral contraceptives introduced.

Sony licenses transistor radio technology.

Scrabble is introduced.

Dick and Maurice McDonald sell their first fast-food franchise.

Born in 1952:

- Douglas Adams (author, *The Hitchhiker's Guide to the Galaxy*)
- Michael Dorn (Worf on *Star Trek: The Next Generation*)
- Jonathan Frakes (William Riker on *ST: TNG*)

■ Flashback is produced with the assistance of the Computer Museum of Boston.

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Fran Quittel

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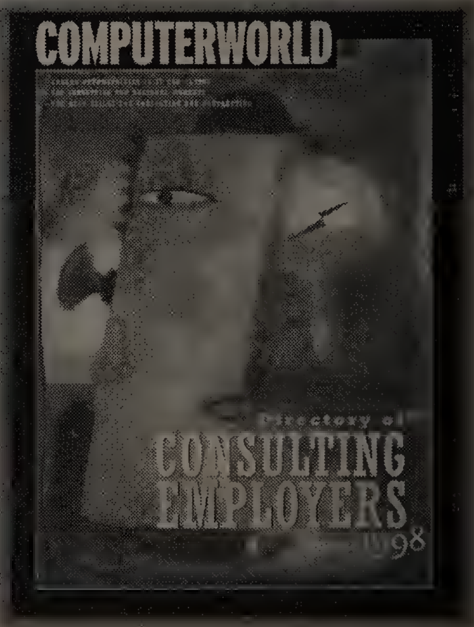

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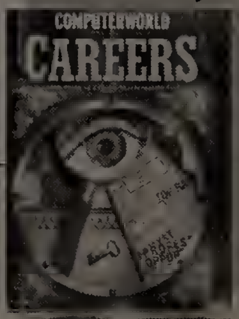

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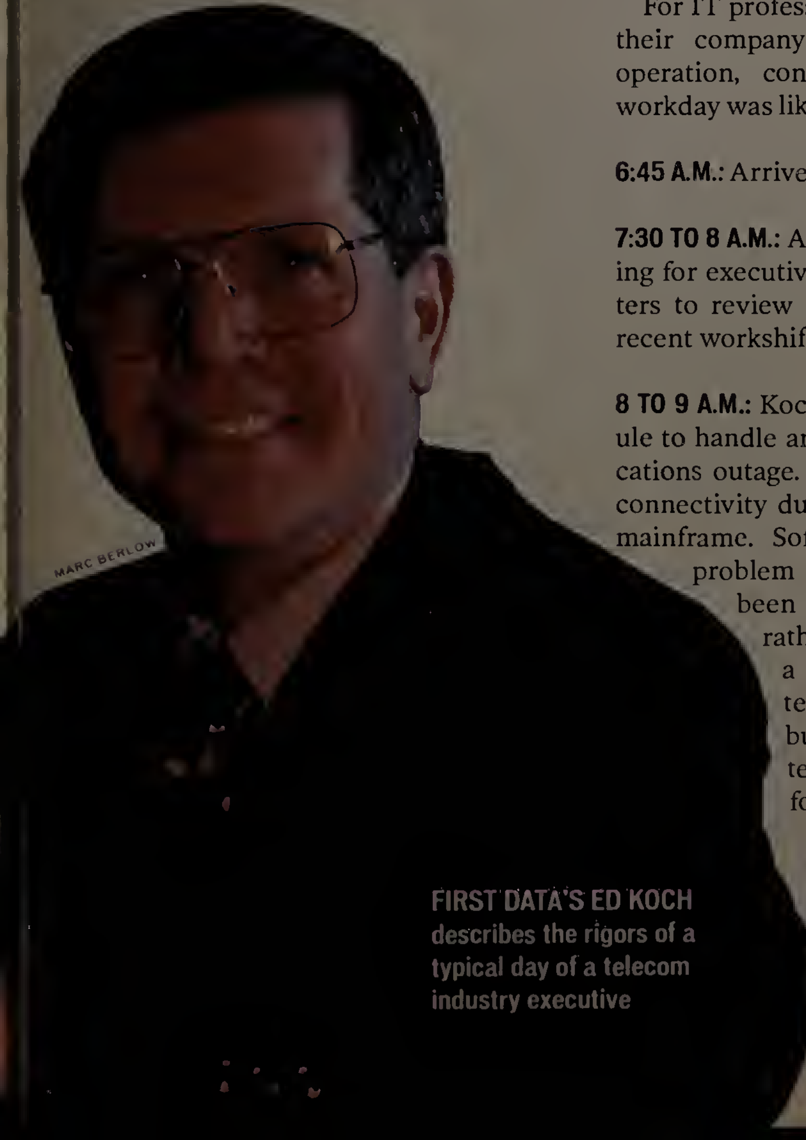
TELECOM TOP GUN

What's it like at the top in telecommunications? Steve Alexander shadowed First Data Card Services' Ed Koch for a look at a day in the life



FIRST DATA'S ED KOCH describes the rigors of a typical day of a telecom industry executive

TO SAY THAT Ed Koch's workday is busy doesn't even scratch the surface. As vice president of telecommunications at First Data Card Services Group in Omaha, he averages at least five meetings per day, and that's just the big stuff.

It's no surprise, really. Telecommunications is the lifeblood of the business at a firm that handles credit-card authentication, processing and financial statements and also outsources account processing for some banks. Koch's operation includes a single LAN that encompasses 7,000 PCs in 43 buildings in Omaha. His customers include 1,400 card-issuing firms such as banks, oil companies and department stores.

For IT professionals aspiring to head their company's telecommunications operation, consider what a typical workday was like for Koch last month.

6:45 A.M.: Arrive at work.

7:30 TO 8 A.M.: A daily operations meeting for executives at Omaha headquarters to review what happened during recent workshifts.

8 TO 9 A.M.: Koch interrupts his schedule to handle an emergency communications outage. Internal terminals lose connectivity during the rebooting of a mainframe. Software to prevent the problem from recurring hasn't been fully installed yet. But rather than install it during a "freeze period" of system changes during the busy holiday period, a technical work-around is found.

10 TO 11 A.M.: Koch attends a meeting on "total cost of ownership" of the firm's LAN. Without his knowledge, he has been "volunteered" to participate in a Gartner Group Inc. study on the subject.

11:30 A.M. TO 12:15 P.M.: Koch has a salad for lunch while he works on performance appraisals for seven employees.

12:15 P.M.: He handles the documents in his in-basket and listens to his voice mail.

1:30 P.M.: Koch attends a data-center strategy meeting on disaster recovery, which involves continuity planning and back-up arrangements. The cost of telecommunications is a key component of backup. "We have to consider whether it is valuable, in terms of the cost of data processing, to move a data center out of our local area and pay the telecommunications costs for doing so."

Another telecommunications issue on the table: how to partition future work between existing data centers in Omaha and Phoenix.

2:30 P.M.: Koch takes time out for a nonbusiness meeting. The company is helping a local school district with a request for proposal and a design for a school LAN. "We are a corporate citizen in the greater Omaha area, and where we can help, we do," Koch says.

2:45 P.M.: Another system outage has occurred, and because it couldn't be resolved in one hour it has been escalated to Koch's level. A small client bank is temporarily unable to provide customers with account processing information because it has outsourced those functions to First Data. To save money, the customer previously elected not to buy backup telecommunications links to First Data. The outage is resolved when the problem is isolated at a central switching office of the local telephone company.

3 P.M.: Subordinates bring in proposed capital expenditures for equipment. "I like to watch my capital expenditures, which annually are around $100,000. I usually make decisions on the spot, because the people making the proposals know what I'm going to ask, and they have their cases [all] drafted," Koch says.

3:30 P.M.: Koch's open-door policy brings him someone with a problem to solve. The company needs to redesign its telecommunications lines that lie beneath a nearby city street that is being widened. The redesign needs to be completed before the ground freezes, a deadline that has been delayed by unseasonably warm weather. A decision is made, then overturned when the local phone company objects to the arrangement. Another meeting is scheduled to settle the problem.

4 P.M.: A client requires an hour-and-a-half meeting to discuss new services. The discussion revolves around costs, service levels and uptime.

5:30 P.M.: Koch goes home for the day; he likes to avoid late nights for family reasons. But he's philosophical about the demands on his time. "Telecom is a very rigorous career field because the people we serve think there are four inalienable freedoms: life, liberty, the pursuit of happiness and dial tone." ◗

Alexander is a freelance writer in Edina, Minn.

Thoughts for the Day

Koch's advice for aspiring telecommunications managers

■ **THE SKILLS THAT COUNT** – Technology skills are not the key thing. Most important are people skills, business and technology skills.

■ **EYES ON THE BOTTOM LINE** – Seeking profit lies at the bottom of all issues. "All decisions can be reduced down to money and manpower, and manpower further reduces down to money," he says. "The goal of any telecom department should be to drive down cost. If we are not saving the company money, then we should be outsourced."

■ **DIPLOMACY WINS THE DAY** – "It is feasible to manage by consensus-building. I tell people to come to me with alternatives. When they do that, they give you their best recommendation."

■ **LIGHTEN UP** – At age 54, Koch says he doesn't take himself too seriously. "I don't know what I want to be when I grow up. I'm happy with my life. I've never had a serious set back in my life, or, if I did, I didn't know it."

– Steve Alexander

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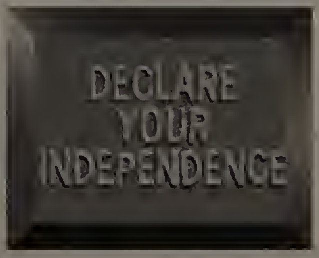

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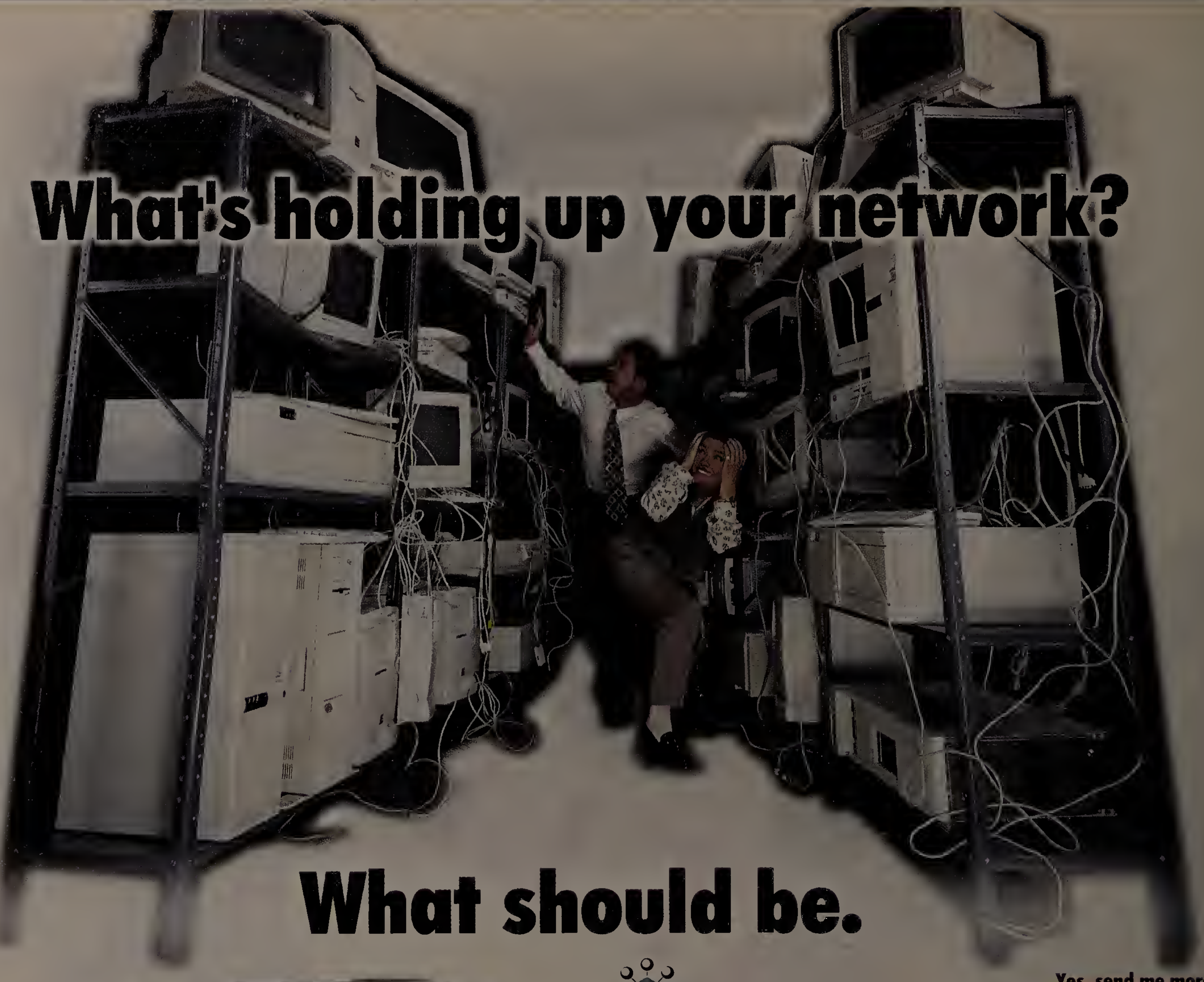
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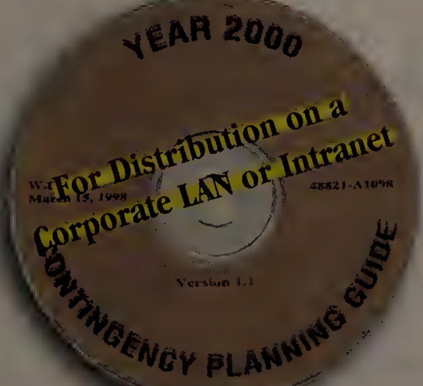
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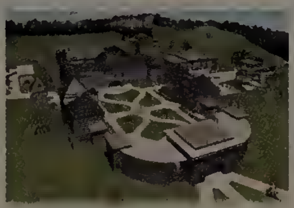

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WEEK IN STOCKS

GAINERS

PERCENT

Excite, Inc. (H)	36.1
Lycos, Inc.	31.3
Sybase Inc.	28.0
Tricord Systems	27.7
Silicon Grafix (H)	14.2
Verilink	14.1
Airtouch Communications (H)	13.2
Bell Atlantic	12.5

DOLLAR

Lycos Inc.	26.94
Excite Inc. (H)	24.31
Microsoft Corp. (H)	13.31
Airtouch Communications (H)	10.94
Xilinx (H)	7.00
Bell Atlantic	6.50
Nokia Corp. (H)	6.06
GTE Corp.	5.81

LOSERS

PERCENT

Documentum	-36.7
Manugistics Group Inc.	-33.3
Computer Horizons Corp.	-26.3
Systems & Computer Technology	-26.0
Wind River Systems Inc.	-21.6
Checkpoint Software Tech. (H)	-19.6
Fore Systems Inc.	-18.6
The Baan Co. NV	-17.8

DOLLAR

Yahoo! Inc.	-39.19
Amazon.Com	-17.28
Documentum	-14.63
Checkpoint Software Tech. (H)	-9.88
Wind River Systems Inc.	-9.75
Infoseek	-8.84
E-Trade Group Inc.	-8.06
Computer Horizons Corp.	-7.13

BANYAN HITS HIGH IN MICROSOFT DEAL

Stock soars on word of $10 million Microsoft investment

INDUSTRY ALMANAC

If you can't beat 'em, join 'em. That's what Banyan Systems Inc. (Nasdaq:BNYN) did in the face of the Windows NT Server juggernaut. Earlier this month, Banyan and Microsoft Corp. (Nasdaq:MSFT) announced a deal in which the two companies will increase the interoperability of their products and Banyan will help its Vines network operating system customers move to NT, aided by a $10 million investment from Microsoft.

The move boosted Banyan stock to its highest point in years, continuing a turnaround widely credited to CEO William P. Ferry, who came on board in February 1997.

Ferry has taken the stock from less than $2 per share in early 1997 — and Nasdaq probation — to a recent high of $17.94 by focusing on consulting and network support services and the Internet/intranet arena rather than software and system infrastructure. For the third quarter of 1998, Banyan posted net income of $681,000 on $18.9 million in revenue; income was down 13% over the same quarter of 1997, but revenue was up 4.4%.

Suzanne Chase, associate managing director at Burnham Securities Inc., says she believes Banyan "has good opportunities to leverage its enterprise networking expertise and expand its consulting business for the implementation of intranets and extranets."

Mark J. Lipacis, an analyst at Merrill Lynch Global Securities, says he rates Banyan "near-term neutral" and "long-term accumulate" because the company's software business has been declining. But he says the Microsoft deal "is positive for Banyan as they build out their network services business."

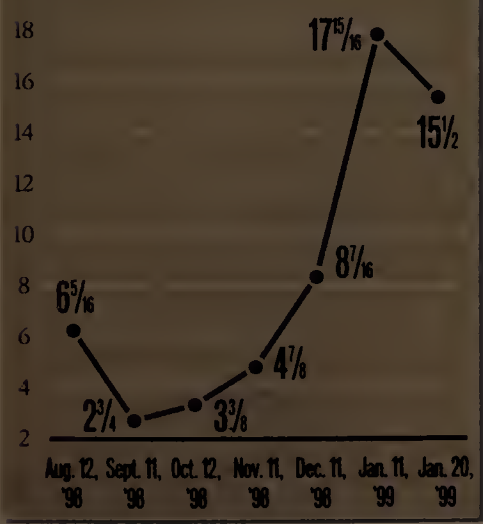
Key to the stock's future will be Banyan's Switchboard subsidiary, a highly touted Web directory service closely watched by investors. Ferry has hinted at a spin-off/initial public offering (IPO) of Switchboard (*www.switchboard.com*) without committing to it. "I clearly recognize the types of values that are being created in the market with Internet-type stocks," he said during a Jan. 13 call with analysts and journalists.

Chase attributes Banyan's stock run-up prior to the Microsoft deal to expectations of a Switchboard IPO.

— David Ramel

Banyan Rebound?

Banyan Systems' stock has shown a steady rise over the past four months, reaching a new high on Jan. 11



SOFTWARE OFF -3.0%

EXCH	52-WEEK	RANGE		JAN. 22 2 PM	WK NET CHANGE	WK PCT CHANGE
ADBE	51.87	23.62	Adobe Systems Inc	48.63	0.06	0.1
AZPN	56.87	6.12	Aspen Technology Inc.	14.44	1.56	12.1
ADSK	50.06	21.62	Autodesk Inc	43.94	-0.81	-1.8
AVID	47.75	11.06	Avid Technology	25.44	0.94	3.8
BOOL	34.87	16.00	Boole & Babbage Inc	29.25	3.00	11.4
CDN	39.00	19.12	Cadence Design Systems	29.44	-2.50	-7.8
CBTSY	63.87	6.68	CBT Group Plc.	18.00	1.50	9.1
CHKPF	56.00	10.87	Checkpoint Software Tech (H)	40.63	-9.88	-19.6
CTXS	107.50	36.37	Citrix Systems Inc. (H)	87.00	-7.13	-7.6
COGNF	30.50	14.75	Cognos Inc.	24.63	0.19	0.8
CA	61.93	26.00	Computer Associates Int'l Inc	48.56	2.75	8.0
CPWR	79.81	35.87	Compuware Corp.	64.81	-6.69	-9.4
DCTM	59.62	16.75	Documentum	25.25	-14.63	-36.7
EFII	41.00	13.50	Electronics For Imaging (H)	38.00	1.88	5.2
HNCS	47.12	22.50	Hnc Software	31.75	-3.13	-9.0
IDXC	55.75	34.00	IDX Systems	45.63	3.38	8.0
IFMX	13.37	3.50	Informix Software Inc.	12.13	0.25	2.1
INTU	104.75	26.25	Intuit (H)	85.31	0.50	0.6
JKHY	55.00	28.87	Jack Henry Aso	41.00	-4.00	-8.9
LGTO	67.75	21.00	Legato Systems Inc.	59.94	-3.56	-5.6
MACR	42.50	7.90	Macromedia Inc.	35.63	-0.38	-1.0
MANU	66.37	6.12	Manugistics Group Inc.	10.13	-5.06	-33.3
MENT	12.00	5.43	Mentor Graphics	9.78	-0.16	-1.6
MSFT	167.75	67.75	Microsoft Corp. (H)	158.56	13.31	9.2
NETA	67.68	25.50	Network Associates	49.38	-5.25	-9.6
GMH	57.87	30.37	Network General	46.88	-0.88	-1.8
NOVL	20.75	6.81	Novell Inc. (H)	19.06	-0.94	-4.7
ORCL	53.87	18.18	Oracle Corp. (H)	50.31	4.00	8.6
PMTC	36.31	8.50	Parametric Technology Corp	13.94	-2.06	-12.9
PSFT	57.43	16.50	Peoplesoft Inc.	24.06	1.38	6.1
PIXR	66.00	26.75	Pixar	38.38	-1.75	-4.4
PLAT	34.31	9.00	Platinum Technology Inc.	13.31	0.06	0.5
RATL	32.87	10.50	Rational Software Corp. (H)	30.00	-0.72	-2.3
SAP	60.12	29.00	SAP AG (L)	30.75	-1.06	-3.3
SCUR	29.00	6.37	Secure Computing Corp. (H)	25.63	0.38	1.5
SE	50.25	20.12	Sterling Commerce Inc.	40.81	-0.44	-1.1
SSW	32.81	18.06	Sterling Software Inc.	22.13	-0.63	-2.7
SDRC	29.00	7.50	Structural Dynamics Research	17.50	-0.03	-0.2
SYBS	11.25	4.50	Sybase Inc.	10.56	2.31	28.0
SYMC	32.62	8.68	Symantec Corp.	21.75	-1.13	-4.9
SNPS	61.25	24.50	Synopsis (H)	56.06	-2.81	-4.8
SCTC	30.87	8.50	Systems & Computer Technology	9.94	-3.50	-26.0
BAANF	55.50	9.50	The Baan Co. N.V.	9.97	-2.16	-17.8
VNTV	39.75	5.00	The Vantive Corp.	12.50	0.75	6.4
TSAI	51.00	27.06	Trans. Sys. Arch.	45.00	-2.75	-5.8
VRTS	84.25	23.75	Veritas Software Corp. (H)	76.50	5.13	7.2
WIND	51.62	28.00	Wind River Systems Inc.	35.38	-9.75	-21.6

TELECOMMUNICATIONS CARRIERS UP 1.9%

EXCH	52-WEEK	RANGE		JAN. 22 2 PM	WK NET CHANGE	WK PCT CHANGE
ATI	98.87	42.00	Airtouch Communications (H)	93.50	10.94	13.2
AT	66.50	38.25	Alltel Corp. (H)	64.81	4.25	7.0
AIT	69.37	40.00	Ameritech Corp (H)	68.06	3.94	6.1
ANDW	30.06	10.37	Andrew Corp.	19.00	-1.06	-5.3
T	96.12	48.37	AT&T (H)	87.94	4.69	5.6
BCE	46.62	25.62	BCE Inc.	39.69	-0.31	-0.8
BEL	61.18	40.43	Bell Atlantic	58.63	6.50	12.5
BLS	50.00	27.75	Bell South	49.00	-0.31	-0.6
CSN	20.75	8.50	Cincinnati Bell Inc. (H)	20.00	0.00	0.0
CMCSK	70.75	30.31	Comcast (H)	64.00	1.06	1.7
CQ	42.75	21.75	Comsat Corp	32.50	-2.38	-6.8
COX	76.43	34.37	Cox Communications Inc. (H)	70.19	-2.50	-3.4
GSTRF	37.12	8.31	Globalstar Telecom. Ltd	18.88	-3.25	-14.7
GTE	71.81	46.56	GTE Corp	67.69	5.81	9.4
NXTL	34.12	15.37	Nextel Communications	29.88	1.38	4.8
SPOT	66.12	26.50	Panamsat	38.88	-0.88	-2.2
QCOM	67.62	37.75	Qualcomm (H)	60.88	-3.13	-4.9
SBC	59.93	35.00	SBC Communications (H)	56.75	0.94	1.7
FON	85.31	50.93	Sprint Corp.	79.94	2.63	3.4
TCOMA	71.56	26.25	Tele-Communications (H)	65.38	3.88	6.3
TDS	51.50	30.62	Telephone And Data Systems (H)	50.13	3.44	7.4
USW	66.00	46.18	US West	61.94	-0.31	-0.5
VIA	82.12	40.25	Viacom (H)	81.00	3.31	4.3
WCII	48.12	10.25	Winstar Communications Inc.	42.22	1.22	3.0
WCOM	80.12	31.12	Worldcom Inc (H)	74.75	0.25	0.3

SERVICES OFF -2.3%

EXCH	52-WEEK	RANGE		JAN. 22 2 PM	WK NET CHANGE	WK PCT CHANGE
ACXM	31.25	16.50	Acxiom Corp.	24.25	-4.00	-14.2
ACS	46.43	22.37	Affiliated Computer Servs	45.75	4.00	9.6
AMSY	40.25	19.25	American Mgt. Systems	37.50	0.50	1.4
AUD	42.12	29.75	Automatic Data Processing	37.63	-0.50	-1.3
BSYS	52.25	32.50	Bisys Group Inc.	48.25	-0.13	-0.3
CATP	58.37	13.37	Cambridge Technology Ptnrs	24.44	-3.44	-12.3
CEN	75.00	44.25	Ceridian (H)	72.56	2.56	3.7
CBR	40.87	13.31	Ciber Inc	25.69	-0.25	-1.0
CDO	23.25	12.43	Comdisco	15.44	-1.00	-6.1
CHRZ	53.50	17.25	Computer Horizons Corp.	20.00	-7.13	-26.3
CSC	74.87	39.93	Computer Sciences	65.38	2.25	3.6
DST	70.56	34.00	Dst Systems Inc.	61.56	1.44	2.4
EDS	53.93	30.43	Electronic Data Systems (H)	51.69	2.19	4.4
FDC	36.81	19.68	First Data Group	34.69	-0.06	-0.2
FISV	54.43	33.87	Fiserv	47.06	-2.88	-5.8
IT	41.75	17.31	Gartner Group	23.13	0.19	0.8
KEA	60.93	24.75	Keane	36.31	-3.19	-8.1
NDC	53.62	26.18	National Data (H)	50.50	2.63	5.5
PAYX	55.06	31.12	Paychex Inc	46.00	0.56	1.2
REGI	31.75	5.12	Renaissance Worldwide	8.38	-0.16	2.4
REY	24.00	12.62	Reynolds & Reynolds	20.00	1.13	5.3
SFE	45.37	17.12	Safegard Scientifics	38.25	2.56	7.2
SAPE	82.87	24.25	Saprent Corp (H)	73.06	3.19	-4.2
SMS	86.50	40.08	Shared Medical Systems	50.31	0.69	1.4
SDS	41.37	21.68	Sungard Data Systems	36.88	1.88	4.8
SYNT	32.82	8.68	Syntel Inc	21.75	-1.13	4.9
TECD	53.12	32.44	Tech Data (L)	32.44	-3.63	-10.1
TSS	28.25	14.43	Total System Services Inc (H)	24.81	0.88	3.7
TSAI	51.00	27.06	Transaction Sys. Architects	45.00	-2.75	5.8

NETWORK OFF -1.7%

EXCH	52-WEEK	RANGE		JAN. 22 2 PM	WK NET CHANGE	WK PCT CHANGE
COMS	51.12	22.93	3Com Corp	45.59	1.59	3.6
ADCT	41.12	15.75	ADC Telecommunications Inc	36.88	1.88	4.8
ANTC	25.75	10.37	Antec (H)	23.94	-0.44	1.8
ASND	93.37	27.75	Ascend Communications Inc. (H)	80.13	5.56	6.5
BNYN	19.37	2.12	Banyan Systems Inc	13.69	1.88	12.0
CS	17.12	6.82	Cabletron Systems	10.81	0.81	8.1
CNEBF	20.00	5.75	Call-Net Enterprises	7.75	0.83	7.5
CSCO	109.93	37.25	Cisco Systems Inc (H)	103.13	3.25	3.3
ECILF	42.87	19.75	ECI Telecom	40.09	2.09	5.5
FORE	28.00	9.25	Fore Systems Inc	16.38	3.75	18.6
HRS	55.31	27.56	Harris Corp	37.00	0.88	2.3
GMH	57.87	30.37	Hughes Electronics GM	48.88	0.88	1.8
ERICY	34.00	15.00	LM Ericsson	23.69	0.69	2.8
LU	120.00	40.50	Lucent Technologies	104.5	5.06	4.6
MADGF	7.75	1.75	Madge Networks	3.63	0.00	0.0
NCDI	13.75	4.37	Network Computing Dev	8.50	[illegible]	14.0
NWK	20.62	8.00	Network Equipment Tech	9.88	0.56	6.0
NN	39.87	15.43	Newbridge Networks (H)	35.94	0.13	0.3
NOK A	155.37	36.06	Nokia Corp. (H)	143.88	6.06	4.4
NT	69.25	26.81	Northern Telecom Ltd	53.69	-1.69	3.0
PAIR	24.37	8.00	Pairgain Technologies Inc	10.83	-0.13	1.2
PCTL	11.93	4.75	Picturetel	9.00	-0.50	5.3
SFA	31.25	11.75	Scientific Atlanta	29.69	1.75	6.3
SHVA	14.37	2.75	Shiva	5.84	0.13	2.2
TLAB	93.12	31.37	Tellabs Inc.	80.00	-3.00	3.8
USW	66.00	46.18	US West	61.94	-0.31	0.5
VRLK	11.18	2.87	Verilink	4.56	0.56	14.1
WSTL	15.25	2.75	Westell Technology Inc	7.13	-1.00	-12.3
XYLN	31.31	9.82	Xylan	19.94	0.13	0.6

SEMICONDUCTORS, CHIPS & EQUIPMENT OFF -0.5%

EXCH	52-WEEK	RANGE		JAN. 22 2 PM	WK NET CHANGE	WK PCT CHANGE
ADPT	27.50	7.87	Adaptec	23.81	0.31	1.3
AMD	33.00	9.31	Advanced Micro Devices	21.50	0.63	2.8
ALTR	71.87	28.25	Altera (H)	60.31	-4.31	6.7
ADI	39.62	12.00	Analog Devices	28.81	-0.56	1.9
AMAT	59.93	21.56	Applied Materials (H)	55.81	0.13	0.2
ASMLF	49.06	12.93	ASM Lithography Holding	44.72	2.22	5.2
HRS	55.31	27.56	Harris Corp	37.00	-0.88	-2.3
INTC	143.68	65.65	Intel Corp. (H)	129.88	-6.13	4.5
KLAC	59.25	20.75	Kla Instruments (H)	51.69	-5.25	9.2
LLTC	104.00	39.12	Linear Technology	99.25	1.88	1.9
LSI	29.37	10.50	LSI Logic	21.38	0.63	3.0
MXIM	56.62	22.31	Maxim Integrated Products (H)	51.75	0.88	1.7
MU	78.25	20.06	Micron Technology (H)	68.38	-1.56	-2.2
MOT	72.43	38.37	Motorola (H)	69.06	0.63	0.9
NSM	28.25	7.43	National Semiconductor	14.25	-0.69	-4.6
STM	98.37	35.87	Sgs-Thomson Microelectron. (H)	90.75	-5.25	5.5
SLR	93.50	35.43	Solectron Corp.	84.75	-1.38	1.6
TER	63.87	15.00	Teradyne (H)	57.69	3.81	7.1
TXN	102.81	44.50	Texas Instrumments (H)	93.13	0.00	0.0
UNPH	81.25	31.25	Uniphase (H)	71.88	-2.06	2.8
VTSS	52.37	17.12	Vitesse Semiconductor Corp (H)	48.63	1.63	3.5
XLNX	87.62	29.75	Xilinx (H)	78.25	7.00	9.8

COMPUTER SYSTEMS UP 2.5%

EXCH	52-WEEK	RANGE		JAN. 22 2 PM	WK NET CHANGE	WK PCT CHANGE
AAPL	47.31	17.37	Apple Computer Inc.	38.89	-1.63	-4.0
ASPX	10.00	1.62	Auspex Systems	5.63	-0.08	-1.1
CPQ	50.25	22.93	Compaq (H)	46.19	0.69	1.5
DGN	21.81	7.00	Data General	20.63	1.44	7.5
DELL	88.12	23.00	Dell Computer Corp. (H)	83.63	4.63	5.9
GTW	68.75	31.81	Gateway 2000 Inc.	59.94	4.81	8.7
HWP	82.37	47.06	Hewlett-Packard Co	69.81	-0.06	-0.1
HIT	84.68	40.18	Hitachi Ltd	70.63	2.13	3.1
IBM	199.25	95.62	IBM (H)	182.38	1.63	-0.9
MUEI	24.75	9.68	Micron	15.00	1.94	11.4
MOT	72.43	38.37	Motorola (H)	69.06	0.63	0.9
NATI	36.50	17.50	National Instruments Corp	30.75	-3.50	10.2
NCR	55.75	23.50	NCR (H)	49.25	0.50	1.0
NIPNY	61.87	31.00	NEC	48.81	-2.19	-4.3
PRCM	13.25	3.50	Procom Tech Inc	9.75	0.88	9.9
SQNT	22.62	5.68	Sequent Computer Systems	14.13	0.94	7.1
SGI	18.12	7.37	Silicon Grafix (H)	17.06	2.13	14.2
SNE	97.18	60.25	Sony	70.38	2.06	3.0
SUNW	115.75	37.62	Sun Microsystems (H)	99.19	0.25	0.3
TEXM	5.00	2.00	Texas Micro	4.44	-0.06	-1.4
TRCD	4.87	0.37	Tricord Systems	3.75	0.81	27.7
UIS	36.37	15.25	Unisys (H)	34.31	-1.13	-3.2

INTERNET OFF -2.1%

EXCH	52-WEEK	RANGE		JAN. 22 2 PM	WK NET CHANGE	WK PCT CHANGE
AMZN	199.12	9.25	Amazon.Com	123.72	-17.28	-12.3
AOL	167.00	22.75	America Online	142.94	3.69	2.5
ATHM	126.75	22.00	Athome Corp.	103.94	-0.06	0.1
CKFR	37.50	5.75	Checkfree (H)	28.69	1.56	5.8
CHKPF	56.00	10.87	Checkpoint Software (H)	40.63	-9.88	-19.6
CYCH	27.75	5.87	Cybercash Inc.	18.25	-1.38	-7.0
EDFY	20.87	4.62	Edify Corp	9.88	-0.38	-3.7
EGRP	108.00	10.00	E-Trade Group Inc	79.00	-8.08	-9.3
XCIT	111.00	18.00	Excite Inc (H)	91.89	24.31	36.1
SEEK	100.00	10.37	Infoseek	64.19	8.84	12.1
LCOS	145.37	17.62	Lycos Inc	113.00	28.94	31.3
NSCP	71.50	14.87	Netscape Communications	61.13	-1.50	2.4
OMKT	29.12	4.25	Open Market Inc	12.31	-1.88	-13.2
OTEXF	31.75	10.00	Open Text Corp (H)	25.13	3.00	-10.7
PSIX	36.75	6.18	Psinet (H)	31.94	3.25	11.3
QDEK	3.00	0.25	Quarterdeck Corp	0.51	0.00	0.0
SDTI	42.75	5.43	Security Dynamics	25.94	1.25	4.8
SPYG	32.25	5.25	Spyglass Inc	15.44	2.69	14.8
YHOO	445.00	28.81	Yahoo! Inc	284.75	-39.19	12.1

STORAGE & PERIPHERALS OFF -4.4%

EXCH	52-WEEK	RANGE		JAN. 22 2 PM	WK NET CHANGE	WK PCT CHANGE
ADPT	27.50	7.87	Adaptec Inc	23.81	-0.31	1.3
APCC	55.50	24.81	American Power Conversion	46.19	-2.50	-5.1
CANNY	25.00	17.00	Canon Inc	21.81	0.38	1.7
DBD	55.31	19.12	Diebold Inc	34.50	-1.88	5.2
EK	88.93	59.50	Eastman Kodak Co	65.50	4.00	5.8
EMC	107.12	27.37	EMC (H)	95.38	0.50	-0.5
IOM	13.37	2.93	Iomega	8.19	-0.81	9
LXK	106.25	35.87	Lexmark Int'l Group Inc (H)	99.00	0.69	0.7
QNTM	29.93	10.81	Quantum (H)	24.88	2.19	8.1
SEG	44.25	16.12	Seagate Technology (H)	38.81	3.13	7.5
STK	51.12	20.12	Storage Technology	32.88	0.31	1.0
TEK	48.18	13.68	Tektronix	25.19	4.19	14.3
XRX	123.37	71.81	Xerox	111.06	4.75	4.1

KEY: **(H)** = New annual high reached in period
(L) = New annual low reached in period

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Compaq

"For all the grand strategies they have talked about since the merger, I have yet to see any marketing or advertising push" involving Digital technologies, said Joseph Pollizzi, deputy head of the science and engineering systems division at the Space Telescope Science Institute in Baltimore.

Instead, he complained, Compaq's inclination has been to continue pushing its line of Wintel servers as its high-end platform of choice, despite having acquired a vast stable of enterprise-level technology.

Echoing such sentiments, a recent Gartner Group Inc. report warned users that though Compaq is likely to support Alpha through 2002, the company will most likely focus on an Intel-centric strategy beyond that, if Alpha revenue fails to pick up. Users thinking of implementing Windows NT on Alpha servers in particular are at high risk because of the likely lack of NT applications on Alpha, Gartner warned.

This week, as Compaq gets ready to announce what is expected to be a strong fourth quarter, much attention will be focused on how well the company's product revenue — especially the portion it acquired from Digital and Tandem Computer Systems Inc. — has done. The company is still working its way through a PC channel inventory glut that slowed revenue in the second half of last year, and several analysts said a slowdown in product revenue now could be bad news for CEO Eckhard Pfeiffer.

In an exclusive *Computerworld* survey of 152 information technology managers at firms that use technologies from at least one of Digital, Tandem and Compaq, only 11% said Compaq is doing a good job communicating its future plans regarding Digital and Tandem technologies such as OpenVMS, Alpha, Digital Unix and Tandem Non-Stop Kernel. And a mere 29% of 59 Digital users surveyed said they felt more secure about their investments under Compaq.

"If I was an end user in any of these environments [Tandem and Digital], I would be paying very close attention to where Compaq is putting its investments" over the near term, said Joseph Ferlazzo, an analyst at Technology Business Research Inc. in Hampton, N.H.

Indeed, Compaq has some decisions to make. The acquisitions of Digital and Tandem have created an unwieldy technology portfolio that includes six operating systems, including three of Unix. Compaq also supports three hardware architectures (Intel Corp., Alpha and MIPS Technologies Inc.).

Compaq is expected to kill off at least a few of those technologies, Ferlazzo said.

Compaq officials declined to be interviewed for this article.

"Compaq certainly has the financial clout and high profile necessary to change things," said Terry Shannon, editor of "Shannon Knows Compaq," a newsletter in Ashland, Mass. "My gravest concern about Compaq is the firm's divestiture of advanced technologies . . . most likely because they do not comprehend the value of the asset in question," he said.

Examples include Compaq's decision last fall to sell key OpenVMS and Windows NT clustering technologies to Microsoft Corp. through a joint agreement under which Microsoft will integrate them into future versions of NT.

"Technology will be a key differentiator even in Compaq's brave new world of commodity computing. Some of the technological divestments are tantamount to a 'dumbing-down' policy," Shannon said.

The challenge for Compaq will be jettisoning technologies without driving away large chunks of its acquired installed base of enterprise users, analysts said.

Pollizzi's organization is an example of the kind of customer Compaq must struggle to retain. The institute is committed to making a major investment in Digital Unix later this year. But lack of a clear direction from Compaq could make such upgrades a harder sell in future at the institute, which also has servers from Sun Microsystems Inc., Pollizzi noted.

Technology Leaders

On the plus side, Digital and Tandem products are among the technology leaders in most of the enterprise server categories they compete in, and its users represent exactly the kind of enterprise customer that Compaq wants to sell into.

But the technologies also are costly to maintain, are proprietary and have dwindling software support and user bases. For instance, the Alpha chip — though a performance leader — remains a niche player with a tiny market share. Digital has made little headway with its Unix, and there's no evidence that Compaq's presence has mobilized any new user or vendor support.

Compaq's emphatic statements and upgrade plans about its commitment to the technologies it acquired have resonated well with users so far — even though their impact may have been minimal.

Compaq also has worries on the low end and can't afford to get distracted from its core business as long as hard-charging Dell Computer Corp. is on the loose.

Take Bissell Inc., once an all-Digital shop. Last year, the manufacturer of vacuum cleaners and other home appliances dropped Digital's PathWorks messaging system for Microsoft Exchange. Compaq lost a bid to upgrade 350 PCs to Dell partly because that company offered greater build-to-order flexibility, said Dan Light, an IT analyst at Grand Rapids, Mich.-based Bissell.

Compaq also has yet to show how it plans to leverage its enhanced sales and service capabilities, some users said.

"We have heard a lot of reassuring words from Compaq, but their sales reps have remained as invisible as they used to under Digital," not keeping in touch with the company about new products and services, said Ronald Freed, MIS manager at Hatfield Quality Meats Inc., a meat processing and packaging company in Hatfield, Pa.

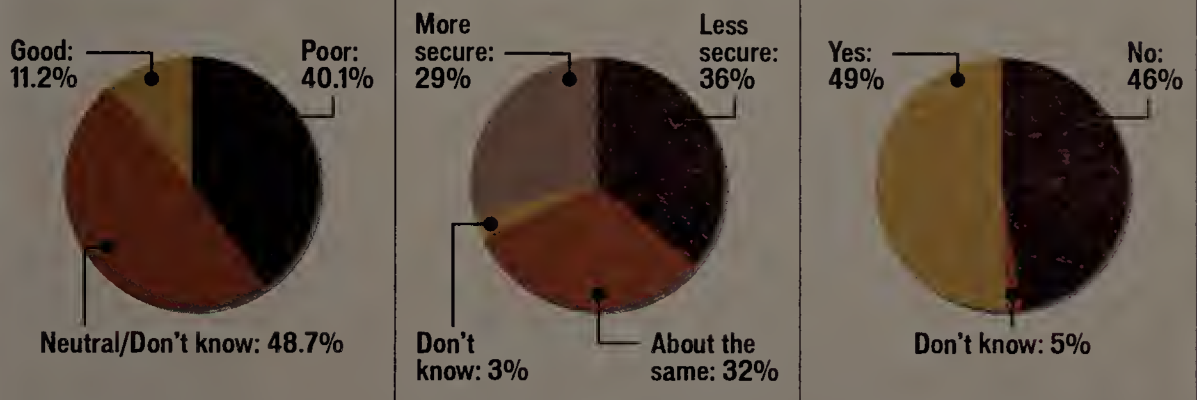
"We are an IBM mainframe shop. . . . If [Compaq] wants to play as an enterprise player, that's the benchmark they have to meet," said John Byrne, vice president of distributed technology at Mercantile-Safe Deposit and Trust Co. in Baltimore. Compaq's service isn't up to that standard, he said. ◗

How is Compaq Doing?

How well has Compaq communicated future plans for Digital and Tandem technologies, such as OpenVMS, Digital Unix and Tandem's Non-Stop Kernel software?

Do you feel more secure, less secure or the same about the future of core Digital technologies (OpenVMS, Digital Unix and Digital Alpha) than you did last year?

In the event that Compaq eliminates support for core Digital technologies (OpenVMS, Digital Alpha and Digital Unix), do you have a backup plan?



Base: 152 IT managers at companies with 100 or more employees who use Digital, Compaq or Tandem equipment

Base: 59 IT managers at companies with 100 or more employees who use Digital equipment

Base: 59 IT managers at companies with 100 or more employees who use Digital equipment

SOURCE: COMPUTERWORLD INFORMATION MANAGEMENT GROUP, FRAMINGHAM MASS

Compaq Touts Alpha, Digital Unix

Compaq next week will announce **Alpha**-based servers and a rebranded **Digital Unix** in what it hopes will be a signal of its commitment to the technologies.

The Houston company is slated to introduce an entry-level Alphaserver called the DS20 – previously code-named Goldrush – featuring a 500-MHz Alpha 21264 chip and running Windows NT 4, Unix or OpenVMS.

The new servers, which can support two Alpha chips, will use crossbar switching that's expected to boost performance to current high-end Alpha server levels at a fraction of the cost, said **Terry Shannon**, editor of "Shannon Knows Compaq," a newsletter in Ashland, Mass.

The systems' starting prices will be between $17,000 and $18,000, he said.

Also slated for introduction is "Monet," the code name for a workstation originally slated for fall 1998 delivery.

A basic version will cost about $10,000, according to Shannon's newsletter.

On the Unix front, Compaq is rebranding its Digital Unix as Tru64 Unix and is expected to add performance and scalability clustering technologies ported from OpenVMS.

"The availability of high-end clustering on Digital Unix boosts my confidence in moving [from OpenVMS] to Unix," said **Joseph Pollizzi**, deputy head of the science and engineering systems division of the Space Telescope Science Institute in Baltimore.

– Jaikumar Vijayan

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INSIDE LINES

WE'RE NO. 8! WE'RE NO. 8!
It turns out U.S. companies don't have the hardest time hanging on to IT workers after all, according to a study by Meta Group of 426 companies worldwide. **Indian companies have the highest IT turnover**, followed by Austria and Switzerland. The U.S. ranked eighth on that list.

YOUR TAX DOLLARS AT WORK
Here's a, um, clever year 2000 solution. Two congressmen want to delay the new year – or at least the New Year's holiday. Representatives John Linder (R-Ga.) and David Dreier (R-Calif.) are floating legislation to **move** the federal government's official observance of **the New Year's holiday** from Friday, Dec. 31, 1999, to Jan 3., 2000. The congressmen argue the shift will give techies an extra day to patch up any problems.

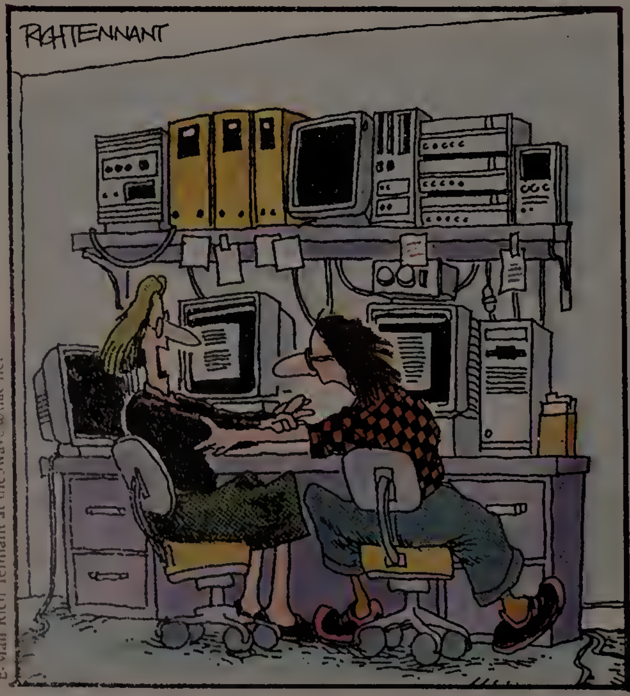
YOUR CONSULTING DOLLARS AT WORK
Ready for more consulting-speak? Meta Group plans to unveil **"collaborative coefficient"** at next week's Metamorphosis '99 conference in Orlando, Fla. The new buzzword means a company's ability to share data with its customers and suppliers. Luckily, the **secret formula** for calculating your collaborative coefficient (trips right off the tongue, no?) will be rolled out at the same time as the buzzword itself.

RUMOR MILL
Compaq isn't talking yet, but word on the street is the company is about to **start shipping Linux**, the freeware version of Unix, with some servers. . . . **Cabletron Systems** may be about to add load-balancing hardware to its SmartSwitch routers. A **rumored deal** has Cabletron using technology from **F5 Labs** in Seattle by year's end. . . . Independent portal **Lycos** reportedly is looking for a little **less independence** – and a media or telecommunications firm to buy a 20% stake.

OVERHEARD
Barton Biggs, global strategist at **Morgan Stanley Dean Witter**, on the soaring prices of Internet stocks: "I promise you that like all bubbles, this bubble will come to **a very bad end**. The trouble is, none of us know when." . . . An **anonymous** corporate IT manager on **Intel**'s plans to build **encryption** in to future CPUs: "God, I can't even imagine. It would be **like oxygen**." . . . U.S. Information Agency public affairs officer **Kathryn Gunning**, after the agency's Web site was hacked twice in five months, with the message, "Crystal, I love you," apparently left by a lovelorn vandal: "We hope this **doesn't happen again**."

HOW ABOUT EASYTOHACK?
Worried about security? Start looking for holes at the top. According to RSA Data Security, a substantial percentage of **chief financial officers use the password "moneyman."** OK, it's cute, it's snappy, it's self-congratulatory. But it's one password you don't want to be simple to guess. News editor **Patricia Keefe** won't have to make guesses if you send her news tips and tidbits. E-mail her at **patricia_keefe@computerworld.com** or call (508) 820-8183.

The Fifth Wave


RICHTENNANT
E-Mail Rich Tennant at the5wave@tiac.net

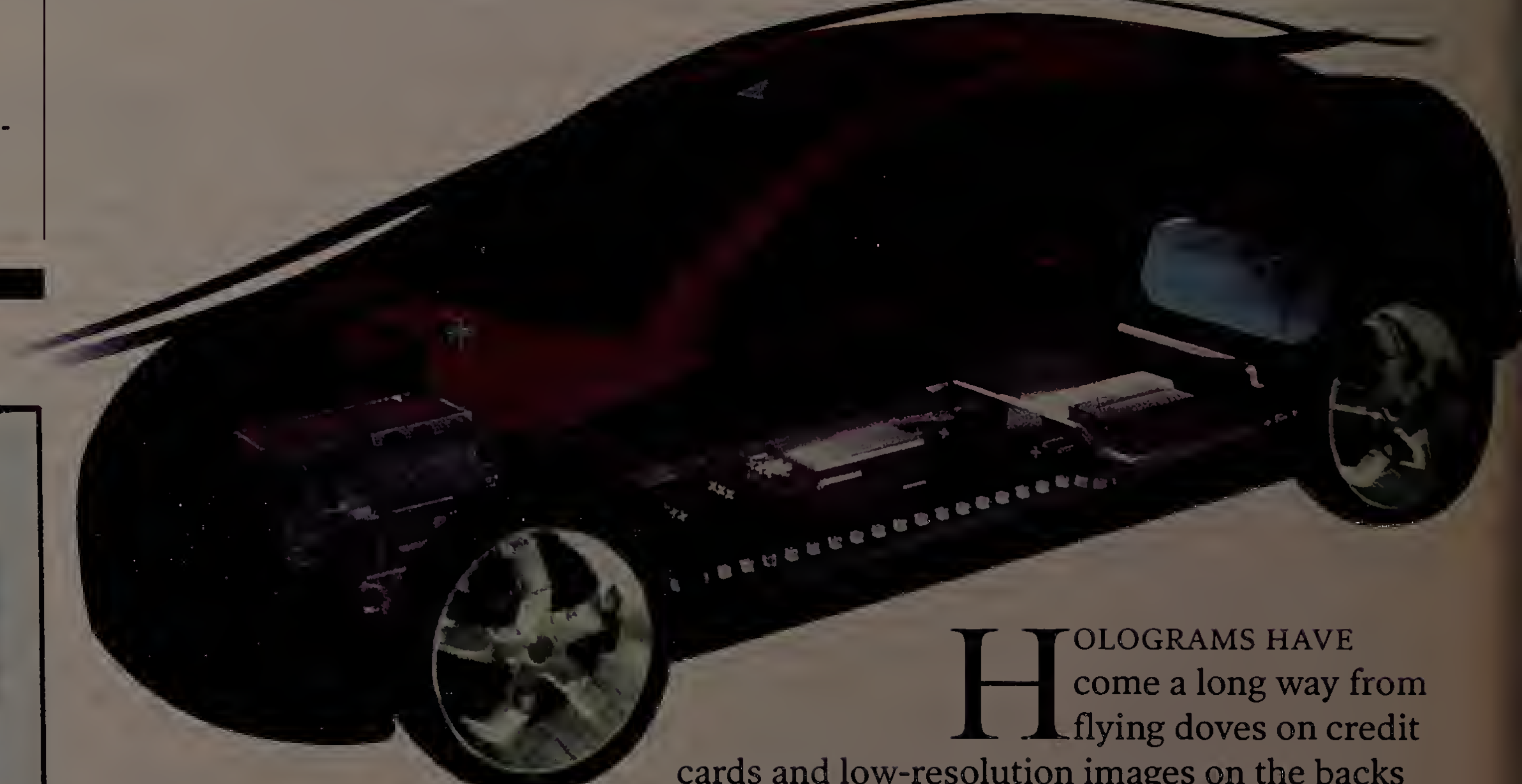
"You're a great geek, Martin. You're just not my geek."

COMPUTERWORLD INDEX

Women who struggle through PC problems themselves rather than ask for help:	**39%**
Men who struggle through PC problems themselves rather than ask for help:	**50%**
Online shoppers who say they enjoy shopping **in their pajamas:**	**13%**
PC users **who have lost data** because of a software bug:	**48%**
PC users who would buy software with fewer features **if it were bug-free:**	**64%**
Projected growth of **cable modem shipments** this year:	**60%**

SOURCES: HEWLETT-PACKARD CO., PALO ALTO, CALIF.; NETCENTIVES INC., SAN FRANCISCO; *PC WORLD*, SAN FRANCISCO; CAHNERS IN-STAT GROUP, NEWTON, MASS

World's Largest Hologram



HOLOGRAMS HAVE come a long way from flying doves on credit cards and low-resolution images on the backs of cereal boxes. Ford Motor Co. is showing its latest "concept car" in the form of the world's largest full-color hologram. It's a 50% scale model in three dimensions, projected on a 40-square-ft. panel. The futuristic car's exterior is a translucent red, letting viewers see inside. The hologram is generated directly from data supplied by the computer-aided design system at Ford's Advanced Design Studio in Dearborn, Mich.

THE 50% SCALE hologram of Ford's P2000 Prodigy "concept car" lets viewers look inside and see features such as the futuristic power train – a hydrogen fuel cell

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